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THE
SIGNS AND SYMPTOMS OF PREGNANCY.

AN
EXPOSITION
OF
THE SIGNS AND SYMPTOMS
OF
PREGNANCY:
WITH SOME OTHER PAPERS ON SUBJECTS CONNECTED
WITH
MIDWIFERY.

BY

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DE BIOLOGIE DE PARIS;
MEMBER OF THE IMPERIAL MEDICAL SOCIETY OF VIENNA;
AND OF THE SOCIETY OF NATURAL PHILOSOPHY AND MEDICINE AT HEIDELBERG.

FROM THE SECOND LONDON EDITION.



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1857

This Book is Dedicated :

TO

CHARLES LOCOCK, ESQ., M.D.,

FIRST PHYSICIAN ACCOUCHEUR TO HER MAJESTY THE QUEEN,

WHO, BY HIS EXTENDED EXPERIENCE AND CONSUMMATE KNOWLEDGE OF THE

SUBJECTS OF WHICH IT TREATS, IS PRE-EMINENTLY QUALIFIED TO

APPRECIATE ANY MERIT IT MAY BE FOUND TO POSSESS ;

WHILE HIS CANDOR AND KINDNESS OF HEART

WILL DISPOSE HIM TO MAKE ALLOWANCE FOR ITS MANY IMPERFECTIONS

AND ERRORS.

THE AUTHOR,

MOREOVER, GLADLY AVAILS HIMSELF OF THIS OPPORTUNITY

OF EXPRESSING TO HIM HIS WARMEST ACKNOWLEDGMENTS FOR MANY ACTS

OF KINDNESS ;

WHICH, AS HE HAD NO MEANS OF DESERVING, SO ALSO, HAS HE

BEEN WITHOUT ANY OPPORTUNITY OF RETURNING.

TO
SIR JAMES CLARK, BART.,
PHYSICIAN IN ORDINARY TO HER MAJESTY THE QUEEN.

MY DEAR SIR JAMES—

I do not now address you for the purpose of asserting the eminent position in our profession to which your own merits have so deservedly raised you, because this is already known to all; nor is it with the intention of recording my full appreciation of your skill and varied acquirements, as I have no ambition to be everybody's echo; my object is one far more gratifying to my feelings, to acknowledge thus publicly, and sincerely thank you for many acts of disinterested friendship and kindness, for which I must ever be so largely your debtor.

Very sincerely yours,

W. F. MONTGOMERY.

DUBLIN, July 4, 1856.

"Hoc autem velim omnes tenere et scire, me scripisse tironibus; non excellentibus in arte Professoribus, nec peritis atque exercitatis magistris; quibus, in hoc libello, plura leviora, et vix commemoratione digna, videbuntur; quæ, tamen, discentium in gratiam, repetenda fuerunt."—PLATNER.

"Multum restat adhuc operis, multumque restabit; nec ulli nato, post mille sæcula, præcludetur occasio aliquid adjiciendi."—SENECA.

P R E F A C E.

THE present Treatise, although only another edition of a work already published, may be, I think, with truth regarded as almost a new book; every sentence of the former having been carefully revised, and the quantity of new matter now added being more than equal in amount to the whole contents of the former edition; in making which additions, I have been careful to use only such as either my own observation has furnished, or, if derived from other sources, appeared to my judgment consonant to truth, and likely to be useful in practice.

The Preliminary chapter, On the State of the Female System during Pregnancy, has, in the present instance, attained to very nearly double its former contents, numerous additions having been made to those parts of it which treat of the increased susceptibility of the nervous system and mind of the pregnant woman, especially as regards impressions made by external objects, and the influence thus exercised on the physical organization and mental constitution of the child, of which, some striking illustrations are adduced; the relations existing between pregnancy and disease have been also much more fully discussed than formerly.

The subject of obstetric auscultation, as a means of detecting pregnancy, which was but briefly treated, has received my best attention, and is here discussed at a length, and with a particularity more commensurate with its great and acknowledged importance.

That singular condition of the female system known as Spurious, or Simulated Pregnancy, which, in the former edition, was comprised within the limits of a short section, is now much more adequately considered, and occupies an entire separate chapter.

Being very anxious to obtain, if possible, accurate, and more numerous data in illustration of certain points connected with the period of human gestation, I addressed letters to several medical men, not only throughout Ireland, but also in England, Scotland, France, Germany, Norway, Denmark, Sweden, and America, requesting such information on the subject as they could afford of a perfectly exact kind. To these applications I received many replies, and accounts of not a few conclusive cases; and I wish now to express my thanks to those gentlemen who have thus enabled me to add so satisfactorily to the number of observations which I had myself already collected.

The state of the blood and urine in pregnancy having, of late years, attracted much notice, and occupied the attention of many of our most distinguished physiologists, and analytical chemists, I judged it expedient to give a full *resumé* of their researches, opinions, and conclusions on those subjects, adding thereto my own, especially as to the practical value of such conditions as means of deciding on the presence or absence of pregnancy.

In the former edition, the dusky hue of the vagina, as an evidence of pregnancy, was very briefly noticed, the subject being then new, and, consequently, but little investigated; since that time, however, ample opportunities of judging of its importance have been afforded me, and I have endeavored to assign its true practical value, as ascertained by my own observations, and the investigations of others.

The chapter on the Examination after Death, has been greatly enlarged by a much more extended account of the corpus luteum, and its value as an evidence of conception. Two specimens of

unusual interest are described and figured: one, where that body was found very perfectly developed in connection with uterine hydatids, without any foetus; and another in which there was only one corpus luteum, in a case of twins.

I have also, now, for the first time, inserted a table containing accurate measurements of fifty-three specimens, either examined by myself, or reported by others, at different intervals, from a few days, to eighteen months, after conception.

The Essay on the Spontaneous Amputation of the Foetal Limbs in Utero has been considerably enlarged by the addition of several new cases of that particular accident; and by making the paper embrace, also, the consideration of some other pathological lesions, to which the child is liable before birth, and, especially, some which appear to have a more than ordinary interest of a medico-legal kind, as being liable to be mistaken for injuries wilfully inflicted on the child, or the results of malpractice, either at the time of birth or afterwards; whereas, they are, in reality, the effects of accidental causes.

Under the head of Signs of Delivery, some precise measurements are added to those formerly given, of the size of the uterus at stated intervals after delivery, taking place at different periods of gestation; a kind of knowledge in which, although confessedly of the greatest value, there is an acknowledged deficiency in our medico-legal works. Under the same head, the fatty degeneration of the uterine substance after delivery, and its entire reconstruction, has now received a notice proportionate to its interest and importance: and I have given the particulars of a remarkable case, in which delivery took place, under my own observation, during natural sleep in a first labor.

When we consider the peculiar nature and immense importance of the subjects treated of in this volume, whether we regard them in a professional, social, or legal point of view, and the extreme difficulty not unfrequently to be encountered in coming to

a correct conclusion on such questions, on which, however, may depend, more than on the result of any other deliberation in medicine or surgery, for these can effect only life or health, but, in the questions to be considered in the following pages, are concerned, in addition, virtue, honor, domestic peace, legitimacy, and the rights thence derivable; in short, the closest ties that bind together, and sanctify the most delicate and important of our social relations; while the difficulties that beset us in such investigations, are as intricate and embarrassing as they are numerous and deceptive, even to those who have long and carefully considered them, few, I apprehend, will be found to dissent from the opinion of Van Swieten, that "there is no circumstance, where a physician's reputation runs so great a risk, as when he is employed to determine concerning pregnancy: if he is not exceeding cautious, there are, everywhere, a number of frauds, a number of insidious cunning tricks, by which he may be easily imposed upon." Under such circumstances, then, I may hope that the present work will not be considered superfluous, especially as there is not, as far as I know, any other sufficiently comprehensive account of the subject, either in our own language or in any other, of which I am aware.

The Index subjoined to the present edition will, I hope, be found sufficiently copious to enable the reader to find, without difficulty, any passage to which he may wish to refer.

I should not do justice, either to my own feelings or to his claims, if I omitted to acknowledge here, with thanks, the many occasions on which, during the composition of this work, I have been indebted for important assistance to Dr. William Moore, of this city, whose correct knowledge of several foreign languages opens for him so many sources of valuable information accessible, in general, to but few, and which his most liberal and obliging disposition makes him take pleasure in imparting to others, in aid of the objects which they may have in view.

In conclusion, I beg to say, that, in the midst of many interruptions, from causes which will readily suggest themselves, I have endeavored, and with perhaps somewhat more than ordinary diligence, faithfully to embody in this book, the results of careful observation of facts, as they presented themselves before me in the contingencies of daily practice, or as collected and digested by others who appeared to be worthy of confidence: still, I am but too conscious that it may be, not unjustly, charged with many defects and imperfections, for the palliation of which I must trust to the kindness of the candid reader, and hope that he may be disposed to adopt the liberal and indulgent sentiment of the Roman critic, and say:—

“Non ego paucis

Offendar maculis, quas aut incuria fudit,

Aut humana parùm cavit natura.”

AMERICAN PUBLISHERS' NOTICE.

IN reproducing the present enlarged and improved edition of Dr. Montgomery's classical work, the object of the publishers has been to place within reach of the American profession a book which has been everywhere so justly received in the most flattering manner. While aiming at an exact transcript of the work, one deviation has been found necessary, in the omission of the plates representing the appearance of the mammary areola during pregnancy. The extreme delicacy of finish and accuracy of coloring requisite to render these plates of any service as reliable guides, would have increased the cost of the work to an extent far beyond their direct utility, as a means of diagnosis, and thus prevented its republication, while their omission was not found in any way to impair the completeness of the text.

The plates representing the CORPUS LUTEUM have been retained, and may be relied on as exact copies of the very beautiful originals.

PHILADELPHIA, February, 1857.



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Plate 1.



A. S. Del.



REFERENCES TO THE PLATES.

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- Fig. 2. Ovary of a woman who died in the second month of pregnancy; exhibiting the prominence of the part containing the corpus luteum, and the color of that structure perceptible through the investing coat of the ovary; the vascular cicatrix being as yet unhealed. See pp. 354, 356, and wood-cuts in p. 355.
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AN EXPOSITION
OF THE
SIGNS AND SYMPTOMS OF PREGNANCY.

CHAPTER I.

GENERAL OBSERVATIONS ON THE STATE OF THE FEMALE SYSTEM
DURING PREGNANCY.

AFTER a careful consideration of the matter, I came to the conclusion that it would conduce to a clearer and more satisfactory appreciation of the value of certain details on which we must hereafter enlarge, if, before entering on the consideration of individual signs of pregnancy, I were to premise some general observations on the effects produced in the female system by that condition, whether resulting from the necessary alterations in the component structures and size of the uterus, and the consequent change of relations between it and other organs, or from certain physiological phenomena connected with the train of actions originating in conception, and thence necessarily continued for the evolution and development of the new organization; and then to glance briefly at some of the practical considerations more obviously connected with these phenomena in their relation to external objects, and to notice the precautionary measures by which we should seek to protect the pregnant female from any injury she might sustain from their influence.

It is well known that immediately on conception, the uterine system becomes endowed with a remarkable increase of vital action affecting its various constituents, so that it is thrown into a condition which, although not properly inflammatory, we may

certainly consider with Baillie¹ "a state analogous to inflammation:" thus, there takes place, at once, a great increase in the vascular supply directed towards the organ and its appendages, the vessels are gorged and distended with blood, and many of them, previously impervious to its passage, now begin to circulate that fluid freely: the tissue of the organ becomes infiltrated with serum, so that its bulk is increased, its texture softened, and its fibres separated, while, upon its internal surface, lymph is poured out, and the mucous membrane lining the cavity undergoes a transformation by which the decidua is elaborated; which, however, is really not a new product, but the inner portion of the uterine structure in what W. Hunter calls a state of efflorescence, being hypertrophied and endowed with a higher degree of vital activity; in which state, it is cast off, and when examined, presents to the eye many of the characters of the false membranes² the results of inflammatory action in other situations; subsequently, large quantities of serum are rapidly secreted to form the liquor amnii; and lastly, the nerves of the uterus increasing both in number and size, as W. Hunter³ suspected and Tiedemann⁴ and Dr. R. Lee have proved, impart to it a more exalted degree of sensibility, which, from their close connection with the great abdominal plexuses and mediately with the brain and spinal marrow, is quickly diffused throughout the system at large, which is soon found to participate in the excitement emanating from the uterus. "The virtue," says Harvey, "which proceeds from the male *in coitu* has such prodigious power of fecundation, that the whole woman, both in mind and body, undergoes a change:" there is felt a sensation of feverish uneasiness, chills alternating with flushes of heat, sick stomach, disturbed sleep, languor, and sometimes, drowsiness; menstruation is suppressed, and the breasts soon begin to evince an active sympathy, becoming swollen and sensitive; the pulse is generally quickened, especially at first, the blood exhibits modified charac-

¹ Hunter on the Gravid Uterus, p. 82. "Lobstein compare l'uterus d'une femme grosse à un organe attaqué d'une inflammation lente et chronique."—Desormeaux.

² Vide Baillie ut jam cit. "La membrane caduque est l'analogue des fausses membranes et la preuve de l'excitation de la matrice."—Burdach.

³ Anat. Grav. Uterus, p. 21. ⁴ Tabulae et Nervorum Uteri Descriptio, p. 10.

ters of inflammation, and venesection is found the most effectual means of relief in many of the most urgent affections of pregnancy, "even in constitutions," says Denman,¹ "which at other times do not well bear that evacuation"—all of which, it may be observed, appear the natural, and no doubt salutary, consequences of the plastic activity prevailing in the great organ of reproduction at the time.

In consequence of this increase of vital action imparted to it, the uterus acquires a principle of growth which steadily proceeds, until, instead of being an insignificant organ buried deep amongst the contents of the pelvis, it attains to dimensions of such magnitude, and undergoes changes in its component structures so remarkable, that, whether considered absolutely or relatively, they present to our observation a series of phenomena at once the most extraordinary and beautiful of any that claim our admiration in the arrangements of the animal economy: surely the enthusiasm of Swammerdam is not to be censured as excessive, when he described it as the *miraculum nature*. The virgin uterus is about $2\frac{1}{2}$ to $2\frac{3}{4}$ inches long, $1\frac{1}{4}$ broad, and about an inch from back to front, with a cavity which would not more than receive into it the kernel of an almond. According to the calculations of Levret, its superficies may be taken at 16 inches, but at the end of the ninth month of gestation, its length is from 12 to 14 inches, its breadth from 9 to 10, and from back to front from 8 to 9 inches: its superficies is now estimated at about 339 inches, and its cavity, which before impregnation was equivalent to about $\frac{1}{4}$, or *quam proxime* $\frac{3}{4}$ ths, of a cubic inch, will now contain 408, so that its capacity is increased a little more than 519 times, and its solid substance from $4\frac{1}{2}$ to 51 cubic inches, or nearly in the ratio of 12 to 1; and at the same time, a similar increase of size is observed in its several constituents; for instance, bloodvessels which before conception would not have admitted the point of a probe will now readily receive the end of our little finger, and yet, let but a few weeks elapse after parturition, and the organ has again resumed its original contracted and diminutive state. But, as we might anticipate, such expansion of an organ so situated must involve many changes affecting

¹ Introduction, p. 220. 5th edit.

other parts also; and as it acquires this increase of volume, it gradually deserts the pelvis and rises out of its cavity into that of the abdomen, disturbing the relations hitherto existing not alone between it and other abdominal viscera, but also the ordinary relations of these with each other. The first organ generally affected in this way is the bladder, which, in the early periods of pregnancy, is liable to increased irritability, owing to its receiving its supply of nerves from a common trunk with those of the uterus, so that frequent micturition is often a very early consequence of a gravid uterus, and one which occasionally continues very troublesome throughout the greater part of gestation. Sometimes, retention of urine is caused by the mechanical pressure of the uterus, before it has quitted the cavity of the pelvis, though the same symptom may occur without our being able to detect this, or any other obvious cause for its production. Towards the close of pregnancy, the female is often unable to retain her water except for a short time, and suffers much inconvenience by its coming away involuntarily while she walks, or if she coughs, laughs, or sneezes; this is caused by the weight of the uterus resting on the fundus of the bladder, which it presses heavily against the inner and upper edge of the symphysis pubis, over which it is now, in some degree, turned, in consequence of the uterus in its ascent drawing it up as well as the vagina, with the anterior wall of which the bladder is so intimately connected; and from the stretching of the round ligaments of the uterus, as well as from the increased sensibility of the nerves which they contain, considerable uneasiness is felt in the direction of these cords, and about their termination at the sides of the pubes. This uneasiness extends also along the nerves of the thigh, producing numbness, cramps, and even considerable pain along the limb, which latter symptoms are often observed amongst the earliest indications of uterine irritation, whether arising from functional derangement, organic disease, or the healthy excitement of pregnancy. It is not unusual, under such circumstances, to find the power of one or both of the lower limbs more or less impaired; and, in some few rare instances, they have become partially or completely paralytic, and even hemiplegia has been observed; but to what degree the mere enlargement of the uterus is the agent in the production of such a state seems very doubt-

ful, especially as we sometimes find the paralysis affecting the upper extremities;¹ the blood drawn under such circumstances has been observed to present highly inflammatory characters; but whatever measures may be adopted, the affection is never perfectly removed until after delivery, from which it would appear to depend on cerebral disturbance, originating probably in uterine irritation, and referable to the state of pregnancy as its specific cause.

When the uterus has acquired considerable size, it begins to interfere with the circulation, especially that through the veins, and, by its pressure upon the trunks which return the blood from the lower extremities and parts within the pelvis, gives rise to anasarca swellings of the feet and legs, and sometimes to more formidable effusions within the cavity of the peritoneum. Varicose veins and hemorrhoidal tumors are probably to be ascribed to the same cause, though perhaps the latter would be with more propriety referred to congestion of the hemorrhoidal veins from the torpid and constipated state of the bowels. Having so far assigned a mechanical agency in the production of these anasarca swellings which so frequently occur in pregnancy, it must be observed that, although they may thus be, to a certain extent, satisfactorily accounted for in the lower extremities, there is frequently evidence of some more general cause operating in the system, probably the increased activity of the exhalants, which is indeed a condition of these vessels necessary for the performance of a very important process essential to the well-being of the *fœtus*, namely, the secretion of the liquor amnii. Without reference to some such general action, we could not satisfactorily explain the production of *œdema* of the upper extremities and face which sometimes accompanies pregnancy, as in a lady seen by the writer some years since, in the ninth month of her first pregnancy, whose case was, for many reasons, one of great interest and anxiety: about the middle of the eighth, swelling of her feet and legs began, and continued until it reached half-way up the thighs; then, her hands became similarly affected—she could hardly close them, and was obliged to put off her rings; her face at length became affected, and to such a degree that when she got

¹ Edinburgh Monthly Journal, vol. xii. p. 492.

out of bed in the morning her eyes were scarcely visible. I may just observe here, that when œdema takes place in such forms as these, it ought to claim our most serious attention, as it is, in general, connected with a state of the vascular system which, if suitable depleting measures are not previously adopted, will probably give rise to convulsions at the time of labor, of which the case of the lady above alluded to was a well-marked instance. If, under such circumstances, the urine be found albuminous, and the patient complains of pain in the head and dazzling of the sight, the risk of convulsions is still greater; though they do not necessarily take place, as I have seen several cases in which all these and still more unfavorable indications were present, and yet the labors passed over without any convulsive attack. It must not be forgotten that this state of the system may be connected with disease of the kidney. When the uterus has acquired its full growth, it occupies a very large space in the abdominal cavity, pressing both the liver and stomach upwards against the diaphragm, by which the capacity of the chest is diminished, the action of the lungs impeded, and a greater or less degree of dyspnœa may be induced, while at the same time, the passage of the bile into the duodenum is interfered with, and slight jaundice may make its appearance, or considerable disorder of the stomach with imperfect digestion render the patient very uncomfortable. Owing to the oblique attachment of the pelvis to the spinal column, and the projection of the sacro-vertebral junction coming in contact with the posterior surface of the uterus as it increases in size and begins to ascend out of the pelvic cavity, after the fourth month that organ cannot rise perpendicularly, but its fundus is inclined forwards, with its anterior surface lying against the peritoneal lining of the abdominal parietes; a relation of parts which continues unchanged throughout the whole subsequent period of pregnancy, and which should be well borne in mind in case of any operation being performed, as for dropsy, or umbilical hernia, during gestation, lest some such miserable result should ensue as is said to have happened some years ago in this country, when a trocar was thrust through the gravid uterus, and into the child's head; another instance of which fatal error is mentioned by Desormeaux¹ as having taken place at Paris.

¹ *Diet. de Méd.*, tom. x. p. 447.

From this anterior projection, or obliquity of the uterus, arise to the female some inconveniences and many important advantages: amongst the former, are the pressure on the bladder already noticed, the stretching outwards of the abdominal muscles and integuments, which frequently become very sore and painful, and even suffer structural injury, in consequence of which, cracks take place which retain a white or pearly hue and remain permanent: in some rarer instances, the distension is sufficient to cause separation between the muscles, of which I have seen several, where the recti had separated from each other to the breadth of two or three inches; and it may be observed here, that when this has happened, and the woman again becomes pregnant, the uterus is liable to fall forward to a very unusual degree, and at the same time distorting the cervix, a condition of the parts may be induced so unnatural as to give rise to a belief in the existence of extra-uterine gestation. In the case of a woman sent to me by the late Dr. Patterson, there was such an alteration of this kind in the abdominal parietes that I could press my hand into the cavity of the pelvis, and grasp the fundus of the unimpregnated uterus. The umbilical ring not unfrequently suffers dilatation, and there is a disposition to hernia at that part, or even complete protrusion may occur; occasionally, the injury done to the muscles and aponeuroses remains permanent, and allows of a degree of protrusion of the abdominal viscera at all times. There is another affection which I believe to be also produced in the same way, though constantly mistaken for, and treated as, local inflammation; I speak of a pain felt at either side, about the margin of the ribs, and arising from the dragging of the muscles at their insertions in that situation, especially of the obliqui at their superior attachment. I have known this pain, when affecting the right side, actively treated as inflammation of the liver, but of course, without benefit, and afterwards completely relieved by rest, friction with an anodyne liniment, and the support of a proper bandage. Lastly, from this obliquity of the uterus, the direction of the centre of gravity is changed, and, instead of falling between the feet, it falls in front of them, in consequence of which, the person has an inclination to fall forwards, and in order to prevent this, is under the necessity of throwing back the head and shoulders, and assuming that

pompous air which is so often unjustly attributed to a wish to make a display of her condition. In persons of very short stature, when the pelvis is contracted, in those who have borne many children, and have the abdominal muscles greatly relaxed, or perhaps separated, or where the sacro-vertebral curve is very prominent, the anterior obliquity of the uterus is proportionally increased; and should some of these causes happen to concur in any individual case, the uterus may not only be thrown into a position of excessive obliquity, but may project horizontally; it has even been found, under a combination of such circumstances, with its fundus turned a little downwards, as happened in the case of the little deformed woman mentioned by W. Hunter.¹

Having thus enumerated the inconveniences so entailed, it may be suggested, that many of them may be very effectually relieved by the use of a simple article of dress, consisting of a broad band or belt with Indian-rubber straps let into it, and so arranged, that it will raise the uterus a little, and carry it, at the same time, upwards and backwards. Now let us turn our attention to the advantages secured by this anterior projection of the uterus, and we shall find how greatly they preponderate; as is ever the case in all the arrangements of Infinite Wisdom, but in none more strikingly or beautifully displayed, than in those by which the perpetuation of our species is effected. These advantages, then, are felt alike during the progress of gestation, and at the time of labor: during the former period, the uterus with its contents is prevented from sinking perpendicularly downwards into the bottom of the pelvis, where, owing to the upright position of the female, it would have a continual tendency to prolapse through the soft parts forming the floor of that cavity; and even if this did not happen, such pressure would be made on the bladder and rectum as must completely prevent the performance of their respective offices; whereas by the existing arrangement the weight of the uterus and its contents is supported by the anterior wall of the pelvis and the adjoining lower section of the abdominal parietes. Again, by this position of the uterus its longer axis, or the line in which its expulsive effort is directed, when in action, is brought into coincidence with the axis of the

¹ See Anat. Grav. Uterus, p. 9.

abdominal aperture of the pelvis: so that, when labor commences, the child is presented, for entrance into that cavity, in the direction the best possible to facilitate its transmission. The particular changes affecting the os and cervix uteri will be fully considered in a future section.

It has been already noticed, that the state of pregnancy is one of increased vascular action, not only in the great organ principally affected, but generally throughout the system, by which a disposition is created to certain affections indicative of plethora, and best alleviated by venesection or other depleting measures. This natural tendency to redundance, during this state, is too often cherished and increased, to the great prejudice of the woman, by mismanagement of her diet, neglect of the state of the bowels, and the want of proper and sufficient exercise, all of which mutually react upon each other, each rendering the effect of each still more decidedly injurious. It cannot escape observation that during gestation the activity of the alimentary canal is almost always greatly impaired, and hence, one strong reason is suggested for greater caution in selecting food of a proper kind, and for restriction in its quantity. Nature, as a safeguard, resorts to vomiting, thereby, as it were, declaring her opinion that there is something superfluous in the system, the evacuation of which is not only beneficial to the parent, but subservient to the welfare of the child, which we know is but too surely threatened when in the early months the disposition to vomit suddenly subsides. The popular prejudice on this subject is that a pregnant woman, *having two to feed, ought to swallow a double supply of nutrition*, while nature declares the exact contrary by disposing her to reject a large proportion of what she takes, and making her averse from many of the richer kinds of meat, which at other times she would eat with pleasure. Moreover, experience has shown that the perfection of the fœtus, either as to health or size, depends very little on the quantity of nutriment supplied to the mother during gestation; hence the attempts that have been made to restrain the growth of the child by using depleting measures and diminishing the food of the mother have not only signally failed¹ in accomplishing the object intended, but the

¹ Vide Merriman's Synopsis, pp. 178, 319, *et seq.*, and British and Foreign Med. Rev., vol. iii. p. 415.

children have been, in some of the trials, unusually large and well thriven, which, as is well known, not unfrequently happens also in the case of women delivered in conditions of the most extreme debility and prostration, arising from disease.¹

Is it not, then, strange to find a physician of intelligence and repute, at the present day, formally recommending, for such a purpose, that the mother should be kept, during the latter half of her pregnancy, upon a diet of the lowest scale, and be profusely bled at intervals?² It is a common remark that women who emaciate during pregnancy bring forth healthier children and have easier labors than others; and the same observation will frequently be verified even where the irritability of stomach is so great that they are continually rejecting its contents, to such a degree as to endanger their safety from exhaustion, as in such cases as that related by Mr. Vaughan;³ while, on the other hand, we have the experience of Denman⁴ that "if the mother has little uneasiness and grows corpulent during pregnancy, the child is generally small." But supposing the vulgar notion to be correct, and that the nutrition and bulk of the child were promoted by such means, the result to the mother must be a proportional increase of difficulty in her labor, and of suffering from its size, as well as from the less regular action of the uterus in a system overloaded and under the influence of feverish excitement; protraction of labor is but a secondary evil amongst those to which repletion and excited circulation expose the female. Inordinate secretion of liquor amnii, with its frequent consequence, relaxation of the uterus after delivery, hemorrhage, convulsions, inflammation, are evils which will be the more surely entailed, if at the same time the state of the bowels be neglected; and we are fully entitled to add to this catalogue, mania with its train of horrors, whose fearful visitation we have often good reason to believe owes its origin to improper indulgences in diet, and want of attention to the action of the alimentary canal.

As another means of guarding against such evils, the necessity

¹ Louis, *Researches on Phthisis*, p. 279.

² M. Depaul. *L'Union Méd.*, 12 Jan., 1850.

³ *Mem. Lond. Med. Soc.*, vol. ii. p. 125. See also the observations of Assalini, *Nuovi stromenti de obstetricia e loro uso*, 1811, and Merriman *ut supra*.

⁴ *Introduction*, 5th ed., p. 237.

for regular exercise during pregnancy should be strongly enforced, and the absurdity pointed out of the fashionable habit, so much, and so injuriously indulged in by fine ladies, who lounge all day long on their sofa, or spend half their day in bed, gratifying a mere indolence of habit which they calculate on being allowed, or even encouraged to indulge in, on account of their situation; while others erroneously adopt such a course from a belief that exercise is unfit for, or likely to prove injurious to them. But, they should be made fully aware how hostile to their present comfort and future welfare is such inactivity, by which a universal torpor of the system is induced, with sluggish action of the liver, indigestion, want of sleep, and a train of nervous anxieties which harass and depress the spirits. How different this from the joyous buoyancy of the sturdy peasant female, whose daily round of laborious occupations is continued without interruption to almost "the hour of nature's sorrow;" who

"Instanti cum plena tument quoque viscera partu
Æquat humum rastris, segetem nascentibus herbis
Liberat, in longos religat sarmenta maniplos
Et duri patiens ita ruris, amansque laborum est,
Inter ut agrestes operas enixa, marito
Progeniem referat, quam non peperisse, sed agris
Invenisse putes."¹

VANIER, *Præd. Rust.*, lib. ii. p. 47.

It should be strongly impressed on the mother, that the advantages obtained by well-regulated habits are, by no means, exclusively conferred on her, but that others equally important are thereby secured to the child, for whom a larger supply of nutrition, and of a better quality, will thus be provided; and so being plentifully nourished by sound and healthy fluids, it shall commence its career of life, strong, vigorous, and less liable to those morbid debilities and derangements which afflict the children of

¹ Which lines I venture to translate thus :—

Who teeming with the soon expected birth,
Weeds the young corn, or harrows down the earth,
Patient of toil, with careful hand she twines
And trains the tendrils of the straggling vines,
Intent on labor; nor as yet forbears
Till pain o'ertakes her 'midst her rustic cares.
Her bosom's load so easily she yields
One might suppose she found it in the fields.

the indolent, the pampered, or the debauched. It is even asserted by late observers, that the number of cretins in the Valais is much diminished since the women have adopted the custom of passing the time of their pregnancy in elevated situations of the country, where they are not exposed to the damps which prevail in the depths of the valleys. Many a mother, with whom no other argument would prevail, might be weaned from injurious indulgences, if it were thus represented to her, that not alone her own, but the future health and happiness of her already-loved unborn infant, must be vitally influenced by the life she leads, while it is as yet drawing its very existence from her heart's blood.

But, on the other hand, pregnant women should be made aware that there are certain modes of activity and of exercise which they should avoid, among which, may be mentioned, lifting weights, driving on rough roads, or in a jolting vehicle; dancing, especially in a crowded and overheated ball-room, and riding on horseback, are calculated to be injurious, and induce abortion; though I have known both deliberately resorted to, for the express purpose, without producing any such result. I am satisfied, also, that I have many times seen ill consequences to both mother and child from merely indulging too freely in frequenting balls and late parties, where she suffers from excitement both physical and moral, and indulges in food and drinks of a kind likely to disorder her digestion and disturb her rest; where a great portion of the night is spent in ill-ventilated rooms, crowded to excess, and where, consequently, the woman must breathe, for hours together, an atmosphere charged with contaminations of many kinds, and totally unfit for the renewal of her blood, from which, as a matter of inevitable consequence, her unborn child must derive only a poisoned supply for its support. This evil state of things is in no small degree aggravated by the style of dress which such assemblies lead to the adoption of; stays and corsets so tightly laced, that the wearer can hardly breathe or move with comfort, by which the breasts and abdomen are painfully compressed, and, both being in a state of progressive enlargement, their increase is interfered with, producing irritation and alterations in the former, of which failure in nursing is a frequent consequence; and with regard to the uterus, a tendency to pro-

lapse and miscarriage. Many a one who confesses, with a smile or a blush, that she is *enceinte*, would do well to remember the origin of the word she uses. It was the habit of the Roman ladies to wear a tight girdle or cincture round their waist; but when pregnancy occurred, they were required by law, at least that of opinion, to remove this restraint; and hence, a woman so situated was said to be *incincta*, or unbound, and hence, also, the adoption of the term *enceinte* to signify a state of pregnancy.

Another article of dress too commonly worn is not without its evils, tight garters, which add seriously to the annoyances caused by œdema of the lower extremities, and by varicose veins. I believe, also, that many women are injured, especially in early pregnancy, and abortion induced, by indulging too freely in conjugal enjoyments; at the same time, I do not think that absolute abstinence is, in general, either required or would be salutary.

When speaking of the physical changes which the uterine system undergoes in consequence of impregnation, it was remarked that the nerves distributed to the organ and its appendages were augmented in size and number, and having their sensibility exalted, diffused throughout the system generally an increase of nervous irritability, which, affecting both mind and body, displays itself under a great variety of forms and circumstances, rendering the female much more excitable and more easily affected by external agencies; especially those which suddenly produce strong mental or moral emotions, whether of the exhilarating, or depressing kind, as fear, joy, sorrow, anger. The powerful influence of such impressions over the functions and actions of the uterus, in every stage of female life after puberty, is recognized in a multiplicity of circumstances, whether as deranging menstruation, inducing abortion, modifying the energy of parturient action, or in affecting the recovery from childbed.¹ Hence the importance of preventing, as far as possible, pregnant women from being exposed to causes likely to distress, or otherwise strongly impress, their minds. Sights of an affecting kind, books, pictures, or theatrical representations which may deeply excite the imagination, or engage the feelings, are decidedly unsafe, and, in illustration of the dangers which may thence arise,

¹ Vide Burrows on Insanity, p. 378, and Merriman, Synopsis, pp. 33 and 224.

I shall mention one or two instances. I was once urgently called to see a lady who had gone to the theatre, when two months pregnant, to witness some grand spectacle, in which armed knights on horseback were to cross a bridge and storm a castle; while doing so, the bridge gave way, and the besiegers were precipitated into the canvas torrent, and some of them much hurt: the lady was dreadfully terrified; screamed, fainted, and was carried home almost insensible, when it was discovered that she was flooding profusely, under the influence of which, and the previous fright, she soon became alarmingly exhausted: however, by the adoption of proper measures, she was restored and tranquillized; but she miscarried before morning. Another case was that of a lady, who after passing several years of her life in straitened circumstances and actively employed, married when no longer very young, and was thereby placed in a condition of comparative affluence, which, unfortunately for herself, enabled her to dispense with any further exertion, and to indulge a natural inclination to indolence and sedentary habits. She soon became pregnant, and spent her whole day lying on a sofa at the fireside, or with her feet on the fender, reading novels, eating and drinking heartily, and having a discharge from the bowels perhaps once or twice in the week. Amongst the books, which she thus daily devoured, was one containing a highly wrought description of one of the Maisons de Santé in France, and of its inmates; this affected her strongly, and took great hold on her mind, and she expressed the greatest desire to visit one of the large lunatic asylums in this city, that she might assure herself of the reality of such things as she had been reading of. In this wish she was indulged, as in everything else, whether right or wrong, to which she took a fancy; and the consequence was, that the appearance of the persons she had seen, and their extravagant expressions and gesticulations, continued to haunt her imagination incessantly up to the time of her delivery; on the third day after which, she showed symptoms of insanity, which became rapidly confirmed, and continued for many months. During her illness, and after her recovery, she repeatedly told me that, from the time of reading the book, and visiting the asylum, she felt as if she would certainly become deranged.

Morgagni tells us of "a certain woman in the fourth month of her pregnancy, and just entering upon the fifth, when news was suddenly brought to her of the instant death of her absent husband; being struck with grief and fear at the same moment, she, from that very time, at first observed the motion of the fœtus to be made more languid, and after that to cease entirely. And at the end of the eighth day, after she ceased to feel the child's motion, she miscarried." "You see, then," he subjoins, "what power passions of this kind have in producing these effects."¹ Smellie relates a very extraordinary case, in which the shock occasioned by the death of a child from convulsions, in the lap of a pregnant woman, was followed by a train of circumstances of a most remarkable kind.²

A striking and pathetic illustration is also recorded in the first book of Samuel,³ in the account of the death of Eli's daughter-in-law, "who was with child, near to be delivered; and when she heard the tidings that the ark of God was taken, and that her father-in-law and her husband were dead, she bowed herself and travailed, for her pains came upon her. And about the time of her death, the women that stood by her said unto her, fear not; for thou hast borne a son; but she answered not, neither did she regard it." Dr. Merriman⁴ relates a most melancholy case, in which, during labor, the abrupt entrance of a person much disliked by the female was instantly followed by a fit which put an end to her life. I believe it is well known that during the years which immediately succeeded the lamented death of the Princess Charlotte, the most gloomy anticipations clouded and depressed the minds of pregnant and parturient women in these countries, and, in the opinion of some of the most competent judges, many untoward events were thus produced in childbed. "Indeed," says Dr. Merriman,⁵ "this calamitous event is still found to operate unfavorably on the minds of patients in a certain rank of life;" and a similar opinion is expressed by Dr. Ramsbotham⁶ with reference to this unfortunate case, from which, he says, "danger was transferred to others; the shock sustained by many

¹ Epist. xlviii., art. 18, 19, vol. ii. p. 721, Alexander's translation.

² Cases, &c., vol. ii. p. 73.

³ Chap. iv. v. 19, 20.

⁴ Synopsis, p. 224.

⁵ Synopsis, 4th ed., p. 227. 1826.

⁶ Practical Observations, part i. p. 192.

women towards the close of pregnancy on the distressful communication, shed a baneful influence on the process of parturition in their several instances." The writer had an opportunity of witnessing the depressing effect derived from this source so long as fourteen years after the event.

I have known the most painful and distressing disturbance caused in the minds of pregnant women, by their having told to them stories of unfortunate results happening in labor, or of monstrous births and other such unfit subjects; to relate which, there is a most ardent, but reprehensible inclination in society, and especially among those more particularly engaged about pregnant and puerperal women. Sue states, in his *Histoire des Accouchemens*, that a gypsy predicted to a woman that she would die during her pregnancy, which made such an impression on her mind that she immediately made her will, and died soon after.

This extreme impressibility of the nervous system in pregnant women, teaches us the necessity for preventing them from witnessing scenes of acute suffering or distress, such as those of sickness, especially convulsive affections, or the agonies of a death-bed; they should not be present when others are in labor, which sometimes greatly terrifies the timid, and even those who pass with courage through the same process themselves. They ought, by every possible means, be saved from exposure to circumstances likely to impress them strongly with terror; which, as already stated, may not merely produce physical injury in them or their child, but has also been known most seriously to affect the mental and intellectual constitution of the latter. A late writer on Insanity, speaking of hereditary predisposition, says: "Nearly allied to the above, in its mode of operation as a predisposing cause, is the condition of the mother during gestation, which has often a striking effect on the future mental health and constitution of the offspring. M. Esquirol¹ has had many opportunities of noticing this in his practice; and he tells us that, for this reason, it is often in the maternal womb that we are to look for the true cause, not only of imbecility, but also of the different kinds of mania. He observes that, during the agitated periods of the French Revolution, many ladies then pregnant, and whose

¹ Treatise on Insanity, p. 161.

minds were kept constantly on the stretch by the anxiety and alarm inseparable from the epoch in which they lived, and whose nervous systems were thereby rendered irritable in the highest degree compatible with sanity, were afterwards delivered of children whose brains and nervous systems had been similarly affected to such a degree, by the state of the parents, that in future life, as children, they were subject to spasms, convulsions, and other nervous affections, and in youth, to madness, imbecility, or dementia, almost without any exciting cause. The extent to which the temporary state of the mother during gestation may influence the whole future life of the child may be conceived from a single fact recorded by the same author. A pregnant woman, otherwise healthy, was greatly alarmed and terrified by the threats of her husband when in a state of intoxication. She was afterwards delivered, at the usual time, of a very delicate child. The child had, however, been so much affected by its mother's agitation, that, up to the age of eighteen, it continued subject to panic terrors, and then became completely maniacal." Haller rejects, as absurd, the influence of the mother's imagination on her child, but he tells of children who appeared to have been visited with convulsions, in consequence of terror experienced by their mothers during pregnancy.¹

It is a well-known fact that James I. had an extreme dislike to the sight of a drawn sword, which even threw him into a panic and set him trembling;² "a foible which," says Sir Walter Scott, "seemed to be as constitutional as his timidity, and was usually ascribed to the brutal murder of Rizzio having been perpetrated in his unfortunate mother's presence before he yet saw the light."

They should not expose themselves to infectious disorders, which if they should happen to catch (though they seem less liable to do so than others), they will, at least, be very likely to miscarry; and even though they may not be themselves susceptible of the disease, the unborn infant may suffer from it, as has been proved with regard to smallpox,³ of which fact the celebrated Dr. Mead has left us the following most remarkable in-

¹ Elem. Phys. Corp. Hum., tom. viii., lib. 26, p. 430.

² See Macaulay's History of England, vol. i. p. 74.

³ See cases by Jenner, Med.-Chir. Trans., vol. i. p. 269.

stance: "A certain woman who had formerly had the smallpox, and was now near her reckoning, attended her husband in the distemper. She went her full time and was delivered of a dead child. It may be needless to observe that she did not catch it on this occasion, but the dead body of the infant was a horrid sight, being all over covered with pustules; a manifest sign that it died of the disease before it was brought into the world." (*Works*, ed. 1767, p. 253.)

Neither should they be permitted, if possible, to see disgusting objects; for although no injury may be thereby done to the child, their minds are apt to remain much troubled with anticipations of some deformity or disfigurement likely to ensue. So prevalent was the belief among the ancients, especially the Spartans, that the good or ill looks and other qualities of the child might be influenced by ideas or objects presented to the mother's mind, that it was an established custom to place beautiful pictures, and other agreeable objects, before their pregnant women, so that they might be constantly in their sight; and I believe it might be said, with truth, that this belief is not extinct among us at the present day. By a law of Lycurgus, it was ordered that they should have constantly in view, the images of Castor and Pollux, as representing beauty and strength combined.

Now in reference to this matter, but without meaning in any way to advocate or countenance either the indiscriminate doctrine of effects produced by the mother's imagination, as the common phrase is, or the ridiculously absurd fabrications by which it has been attempted to maintain it, I cannot help thinking it quite consistent with reason and the present state of our knowledge, to believe that a very powerful impression on the mother's mind or nervous system may injuriously affect the foetus, still lodged in her womb, actually a part of herself, and deriving its supply of life from her blood; and this, the more especially, as many instances have been witnessed, in which the child *after birth* has suffered seriously by being suckled by a woman laboring under some strong mental impression: thus, convulsions in the infant have been induced by a fit of passion in the nurse; and the same result followed in a case in this city, some years since, in which a lady suckled her child soon after receiving a great shock, by having her husband brought home to her wounded in a duel.

Such consequences it is altogether inaccurate to attribute to the influence of the mother's imagination, while they are truly effects of physical causes of a very obvious kind, and in no way fairly ascribable to the power of imagination: but to whatever conclusion we may come, as to the precise agency in such cases, it will be always safe and prudent to act on the presumption that such consequences *may* follow certain causes, from exposure to which it may be in our power to save the pregnant woman; for "although," to use the words of Morgagni,¹ "I do not approve these things (that is, the absurd stories), there are cases wherein it seems to me to be very hard to depart totally and altogether from that opinion which is common to the greatest men."² In a case already quoted (p. 31) from this celebrated writer, a mental impression was quickly followed by the death of the child; and if such an influence can thus destroy its life, it is surely not unreasonable to admit that it may have the power of modifying organization. So also thinks one of the most eminent pathologists of our time:³ "The question whether mental emotions do influence the development of the embryo must be answered in the affirmative. Instances undoubtedly have occurred of such maternal impressions; fright, more particularly, when violent, giving rise to malformations. Seeing that many malformations originate in an arrest of development, and how frequently the former bear a certain resemblance to various animals, it is just conceivable that the development of the embryo may be so arrested by maternal emotions as *accidentally* to occasion a likeness between the object that produced the impression and the resulting malformation." An instance of this kind occurred under my own observation, several years ago, so remarkable, that I trust I shall be excused if I think it presents something more than a mere, though striking, coincidence.

A lady, pregnant for the first time, to whom I recommended frequent exercise in the open air, declined going out as often as was thought necessary, assigning as her reason, that she was afraid of seeing a man whose appearance had greatly shocked and disgusted her; he used to crawl along the flag-way on his hands

¹ Epist. xlviii. art. 54.

² He refers to Boerhaave, *Prælect. ad Instit.*, § 694, and to Van Swieten.

³ Rokitansky, *Pathological Anatomy*, vol. i. p. 11.

and knees, with his feet turned up behind him; which latter were malformed and imperfect, appearing as if they had been cut off at the instep, and he exhibited them thus, and uncovered, in order to excite commiseration. I afterwards attended this lady in her confinement, and her child, which was born a month before its time and lived but a few minutes, although in every other respect perfect, had the feet malformed and defective, precisely in the same way as those of the cripple who had alarmed her, and whom I had often seen.

Still more recently I witnessed the following fact:—

Mrs. N., the wife of a clergyman, came to town for her confinement, and a lady who was with her told me that she had been very uneasy in her mind from an apprehension that her child would be born with a deformed hand; her anxiety had been induced by the following occurrence. The mistress of a school which she frequently visited had been delivered of a child with a deformed hand; and as Mrs. N. was known to be, at all times, very nervous and easily alarmed, and was then a short time pregnant, great pains were taken to prevent her seeing the child, except with such precaution as would preclude her observing the hand: it happened, however, one day that she walked unexpectedly into the room where it lay asleep, and sat down by the cradle to look at the child, which at the moment happened unfortunately to have the deformed hand fully exposed to view: she felt greatly shocked, and often afterwards alluded to what she had seen, and expressed her conviction that her child would be born with a similar deformity. Very soon after her delivery, she expressed an anxious wish to see her infant, which was brought to her wrapped up in a flannel, in the usual way: she instantly drew out the child's arm, and exclaimed with a look and tone of horror, "Oh, the dreadful hand!" and there it certainly was, with exactly the same deformity as that which had excited her disgust and terror, several months before. The deformity consisted in the absence of one finger, and the complete union of the middle and third fingers, the united extremities of which were covered by one nail, presenting a very disagreeable appearance indeed.

Several instances have come to my knowledge in which impressions from external objects have produced in the lower animals,

also, corresponding effects on their offspring; and, in my opinion, we have an unequivocal example of the exercise of such an influence in the well-known history of Jacob's agreement with Laban, that all the cattle that were ring-straked, speckled, and spotted, should be his; and, in order to cause their being so, we are told that "Jacob took him rods of green poplar, and of the hazel and chestnut-tree; and pilled white strakes in them, and made the white appear which was in the rods. And he set the rods which he had pilled before the flocks in the gutters, in the watering troughs when the flocks came to drink, that they should conceive when they came to drink. And the flocks conceived before the rods, and brought forth cattle ring-straked, speckled, and spotted."¹ I do not believe that we have any just grounds for considering the result in this proceeding, as miraculous; but simply that Jacob, having from experience ascertained that such a consequence was likely to follow from such an arrangement, adopted it as a means which he had previously known to be successful in producing a like effect.

In a very interesting paper by Dr. Alexander Harvey,² of Aberdeen, he observes "that many breeders of stock are impressed with the belief that certain *colors* present to the eye of the parent animals, and particularly of the female, at the time and in the act, of their being coupled together, and to the eye of the female both before and during her pregnancy, influence the color of the progeny; and they make this belief a practical principle of action in the breeding of their stock, in order either to prevent, or to secure, the admixture of any particular color in the offspring, different from that of the parent animals:" and he then relates several striking cases in illustration.

Very recently, Dr. Nicolls, of Longford, communicated to me the following case, which occurred under his own observation: "Mr. H., of Killasbee, had a remarkably large cow, which he sent to a very large bull belonging to the postmaster of the village; there was a small Kerry cow in the yard, when the cow was served, and which she went to lick after the bull left her: when this large cow, served by a large bull, calved, the calf, in color

¹ Genesis, chap. xxx. 37, 38, 39.

² Edinburgh Monthly Journ. Med. Sci., vol. xi. p. 390.

and size, took after the Kerry cow, which in color differed materially from the dam and sire of the calf."

But to return to the two instances observed in the human female, as above related; in both, there was an obvious and recognized object making a powerful impression on the mind, of a disagreeable kind, complained of at the time, and followed by an effect in perfect correspondence with the previous cause; there being, between the two, a similarity so perfect, that, with the distinguished author above referred to, I "will not easily suppose that chance could have been so ingenious, if I may be allowed to speak thus, and so exact an imitator,"¹ and though I must acknowledge, in the words of Van Swieten, "that I do not understand the connection of the cause acting upon the mother, with the effect observed in the foetus,"² I also agree with him that it must not therefore be denied that such a thing has really happened; and while I reject totally those relations which can attract attention only by the monstrous absurdities with which they overtax our credulity, I would not wish to adopt the philosophy of those "multi medici" complained of by Galen,³ "qui rerum, quæ manifeste conspiciuntur causas reddere nequeunt, eas esse omnino negant," for, were such a rule of judging to be adopted, there would, indeed, "be too many things in Physics that I must deny, if they were to be denied, because I do not understand the manner in which they are brought about."⁴ Many of the acknowledged and demonstrable phenomena connected with generation should thus be rejected as untrue, because inexplicable, and among others, one may be selected which, from reasoning alone, would appear far more incredible than could be any effect produced on the foetus in utero by a cause acting on the mother during its gestation. I allude to the well-known fact, that when the Earl of Morton's Arabian mare was covered by the quagga, not only did the mule so begotten partake of the characters of the sire, but

¹ Morgagni, epist. xlviii. art. 54. Vide epist. lxvii. art. 16.

² Comm., sect. 1075.

³ De locis affectis, lib. v. cap. iii.

⁴ Roussel has put this matter so happily, that I shall quote his words: "Nous pensons que, lorsqu'une chose n'est inexplicable que parce qu'elle est obscure, et que parce que nous ignorons des circonstances qui nous en donneraient la clef, si nous les connaissions, le doute devrait être la ressource la plus digne du sage."—*Système physique et moral de la Femme*, p. 160.

when the mare was subsequently submitted to an Arabian stallion, by whom she had three foals at different times, the first two continued to exhibit some of the distinctive peculiarities of the quagga, conjoined with the characters of the Arabian breed.¹ Mr. Mayo mentions that a similar occurrence was observed by Mr. Giles in a litter of pigs which resembled in color a former litter by a wild boar:² and still more recently Mr. Orton³ has demonstrated the same result by direct experiments made on the bitch, the sow, and the mare, and observes: "It is remarkable that, though the knowledge of this curious influence has only lately dawned upon Europe, the Asiatic seems to have been in possession of it. In Abdel Kader's celebrated letter on the Arab horse, the principle is touched upon. He states that a mare having bred with the ass is no longer fit to breed from; why, he does not say, perhaps does not himself know, but we can now easily see the reason."

I believe it is also true that, as in the foregoing instances among the lower animals, so in the human race, certain peculiarities of the male parent may be thus transmitted to the subsequent offspring of the same woman, begotten by another man: as, for instance, suppose a white woman to be first impregnated and have a child by a negro, and afterwards to have another child by a white man, it is more than probable that this second child will exhibit certain characteristics belonging to the negro; as seems to have happened in a case observed by Dr. Simpson, in which, under these circumstances, the child by the second father exhibited distinct traces of the negro peculiarities: and we have the authority of Dr. Dyce, adduced by Dr. A. Harvey, that "a creole woman bore fair children to a white man, and that the same woman had afterwards, to a creole man, other children, who bore much resemblance to the white man, both in features and in complexion."⁴

Such occurrences appear forcibly to suggest a question, the correct solution of which would be of immense importance in the history and treatment of disease. Is it possible that a morbid

¹ Vide Philos. Trans. 1821, p. 21. ² Outlines of Physiology, 3d ed., p. 376.

³ Edinb. Monthly Med. Journal.

⁴ Edinb. Monthly Med. Journal, Oct., 1849, p. 1135.

taint, such as that of syphilis, for instance, having been once communicated to the system of the female, may long linger there, and, influencing several ova, continue to manifest itself in the offspring of subsequent conceptions, when impregnation has been effected by a perfectly healthy man, and the system of the mother appearing to be at the time, and for a considerable period previously, quite free from the disease? "My belief is certainly in favor of the affirmative." Such was the opinion I expressed in 1837; and further experience and observation have, I think, shown to be fact, what I could, then, only venture to say I believed to be likely. Thus, M. Vidal has reported the following case,¹ which seems strongly in point: "A woman, whose husband was affected with constitutional syphilis, gave birth to a child, which, in two months, showed symptoms of that disease, of which it died; the woman never had any appearance of syphilitic affection, not even sufficient to soil her linen. Her husband died, and, after remaining some time a widow, she married a healthy man; and about twenty months afterwards, being four years after the former birth, she bore a child, which, in two months presented the same form of syphilitic eruption which had appeared on the former child." In another case of great interest, related by Cazenave,² the same result was observed, though under circumstances somewhat different. "A widow became affected with syphilis, for which she was treated, and appeared perfectly cured, and remained afterwards in uninterrupted health. Some time after, she married, and had in succession two children who died of syphilis, but the husband was not in any way infected by her. This second husband soon died, and madame married a third time, and had twins, which perished of the same disease; afterwards, she had a son, who was soon attacked with that form of syphilitic ulceration called *corona veneris*, but being put under mercurial treatment, got well and survived. It is worthy of remark, that the second of the children communicated the disease to its nurse."

Before leaving this subject, I wish to notice a fact, the observation of which I thought was original with me; but I now find

¹ *Gaz. des Hôpitaux*, Nov. 6, 1841.

² *Traité des Syphilides*, &c., p. 133.

it was made long ago by others.¹ It may be thus stated: A woman is married to a man who has latent constitutional syphilis, by which she is infected, but will show no symptom of the contamination until she conceives, and perhaps miscarries, and then, the taint is manifested by the development of secondary symptoms in the course of a few weeks, as if the infection was at first communicated and confined to the product of the ovary, and the general system became thence contaminated: or perhaps, another explanation may equally apply, and we may suppose that the new condition and altered action of the generative apparatus had the power of rousing up and rendering active the latent poison lurking and dormant in the woman's system—as we see occasionally happen in patients constitutionally disposed to phthisis. Whichever of these explanations may be nearest the truth, there can be no doubt of the frequent occurrence of the fact.

The irritation of the nervous system is, in some, most obviously perceived in the change induced in the moral temperament,² rendering the individual depressed and despondent, or, perhaps, she who was naturally placid and sweet tempered becomes peevish, irritable, and capricious, to a degree as distressing to herself as it is disagreeable to others; yet over this, she has little control, and therefore much allowance must be made for such waywardness, which, instead of exciting opposition, resentment, or reproach, should claim our utmost indulgence and commiseration, and our best endeavors to comfort, soothe, and cheer. A lady of rank and very superior acquirements told me, that, for the first two or three months of her pregnancies, she became so irritable that, to use her own words, she was a perfect nuisance in her house, and was so painfully conscious of it herself, that she would sometimes remain in bed all day, or confine herself to her room to avoid displaying her irritability to the annoyance of others. This lady has since died of cancer uteri, under most deplorable circumstances.

I have known the effect produced to be the reverse of this, and

¹ See Gardien, *Traité d'Accouch.*, ed. 1824, vol. ii. p. 29. Dr. F. H. Ramsbotham, *Med. Gaz.*, May 23, 1835, p. 244.

² "Usque adeo nempe fecundat virtus a mare in coitu proveniens, ut integram feminam tam moribus animi quam corporis vigore immutat." Harvey, 4to. ed., p. 593.

a decided amelioration take place in the temper, as we sometimes also see happen in the exercise of the bodily functions during pregnancy. A gentleman once informed me, that, being afflicted with a stepmother naturally more disposed to practise the *fortiter in re* than to adopt the *suaviter in modo*, he and all the household had learned, from experience, to hail with joyful anticipations the lady's pregnancy as a period when clouds and storm were immediately exchanged for sunshine and quietness.

Some suffer most from this irritability depriving them of sleep, night after night, especially if they have not guarded against feverishness by proper attention to the state of the bowels, or sleep in rooms too warm, or insufficiently ventilated; and yet, it is singular how little they appear to suffer from this loss of rest, seeming really as much refreshed and recruited by the short snatches of sleep which they obtain as they would, at other times, when enjoying unbroken repose. Others sleep, but suffer even more from painful and distressing dreams; while some are liable to annoyance of a totally different kind, being constantly so drowsy, that it is with difficulty they can keep awake, even in company.

I suppose many have noticed a curious fact connected with the state of mind in pregnant women, when their bodily health is, at the same time, good, namely, that however depressed or dispirited with gloomy forebodings they may have felt in the early part of their pregnancy, they, in general, gradually resume their natural cheerfulness as gestation advances, and, a short time before labor actually commences, often feel their spirits rise, and their bodily activity increase to a degree that they had not enjoyed for months before. I have known instances, in which this took place, so regularly and distinctly, in successive pregnancies, that the patients were able, from its occurrence, to anticipate and announce the near approach of their labor. This must strike us as a wise and beautiful arrangement, by which, on the eve of suffering, the mind rises with a spring to meet the trial with cheerfulness and fortitude, which experience proves so materially to contribute to a happy result.

Occasionally, however, the depression assumes a more serious aspect, and the woman is constantly under the influence of a settled and gloomy anticipation of evil, sometimes accompanied

with that sort of apathetic indifference which makes her careless of every object that ought naturally to awaken an interest in her feelings; a state which we sometimes observe in fever and other severe disorders, in which it is justly considered a most unfavorable symptom. When this occurs in pregnancy, it will generally be found accompanied by very evident derangements in bodily health; a dull heaviness, or aching of the head, a loaded tongue with bitter taste in the mouth, constant nausea, costiveness, and a foul state of the alvine discharges, with, not unfrequently, a bilious tinge in the skin, and other symptoms indicating hepatic derangement, together with a quick pulse and a dry hot skin, constitute the group of symptoms likely to be present, and which urgently demand attention for their removal before the time of labor, otherwise serious consequences are to be apprehended. Sometimes this state appears to depend on some peculiar condition of the brain, the nature of which we probably cannot appreciate, and which our treatment will but too often fail to correct; in one strongly marked instance of this kind, which was some time ago under my care, the lady became maniacal on the fifth day after delivery, and continued deranged for many months. (See some observations already made, page 29, *et seq.*)

Reasoning by analogy from such considerations as those we have just been engaged in, we would be led to expect as probable, what experience confirms as certain, that, occasionally, the cerebral disturbance during pregnancy, which, in most instances, only shows itself in unevenness of spirits, or irritability of manner or temper, amounts, in some, to absolute disorder in the intellectual faculties, especially in habits naturally very excitable, or where there is an hereditary predisposition. "If we consider," says Dr. Pritchard,¹ "the frequent changes, or disturbances occurring in the balance of the circulation from the varying and quickly succeeding processes which are carried on in the system during, and soon after the periods of pregnancy and childbirth, we shall be at no loss to discover circumstances under which a susceptible constitution is likely to suffer. The conversions, or successive changes in the temporary local determinations of blood which the constitution, under such circumstances, sustains and

¹ Treatise on Insanity, p. 312.

requires, appear sufficiently to account for the morbid susceptibility of the brain:" "Ce qu'on ne saurait nier," says Roussel,¹ "c'est que l'esprit des femmes enceintes est singulièrement modifié:" and we have already seen, page 32, that this susceptibility to mental disturbance, on the part of the mother, has been recognized on high authority, as giving rise to one species of congenital predisposition to insanity in the offspring. In some, this sensorial agitation may be confined to the more strongly marked forms of hysteria, or only exhibit itself in those unaccountable "phantasies, called longings, which," says Dr. Burrows, "are decided perversions or aberrations of the judgment, though perhaps the simplest modifications of intellectual derangement,"² but others are truly, and even violently, maniacal. I have, on another occasion,³ noticed a case where mania occurred in eight successive pregnancies, and another, in which the woman was, three times, similarly affected soon after conception, and remained deranged until within a short time of her labor, when she became sane, and continued so until the recurrence of pregnancy. "Some," says Dr. Burrows,⁴ "are insane on every pregnancy or lying-in, others, only occasionally." Marc, writing on the same subject, says,⁵ "Je me rappelle une dame placée dans l'établissement de M. Esquirol, et dont chaque commencement de grossesse est caractérisé par un état de demence passagère." Goubelly relates a case of an opposite kind, in which the lady was of sound mind only during her pregnancies, but was then deficient in memory; of which latter effect, Mrs. Durant presented a remarkable instance.⁶

"A fright produced by the dangerous situation of her only son when eighteen months old, brought on, in Mrs. Durant, an alarming illness, attended with some singular phenomena, the most singular of which respected her memory. The illness happened in July, when she was advanced six months in a state of pregnancy, and was, when perfectly insensible, delivered of a child. On awaking from her insensibility, which had continued

¹ *Système de la Femme*, p. 160.

² *Commentaries on Insanity*, p. 147.

³ In a paper on the Occurrence of Mental Incoherence during Natural Labor, in the *Dublin Medical Journal*, vol. v. p. 52.

⁴ *Op. jam. cit.*, pp. 364, 378.

⁵ *Dict. de Sci. Méd.*, tom. xix. p. 489.

⁶ *Durant's Memoirs of an Only Son*, vol. i. p. 147.

for three days, she imagined it was the month of January. Her mental powers generally were but slightly impaired, and soon regained their former perfection; nor was her memory affected, except as regarded the preceding six months. Of that time, she had forgotten *all* the events: some accidental circumstance might, afterwards, occasionally produce a train of thought, which would bring an event of those six months to her recollection; but several of the most important were never regained, nor could she, to the hour of her death, remember that she had then been pregnant." I have met with a few instances in which the memory was similarly effaced, and under apparently similar circumstances, but for much shorter periods of time.

Should there, unfortunately, happen to be superadded to physical predisposition the influence of some moral evil, some absorbing mental trouble, the tendency to this unhappy malady is much increased: in the opinion of Esquirol, the moral causes affecting pregnant women are, in relation to the physical, as four to one,¹ and, of ninety-two cases of puerperal mania reported by him, twenty-nine were in unmarried women. How deplorable, then, must be the condition of the mind, in a woman who, led astray by the profligate seducer from virtue's paths of pleasantness and peace, and then abandoned, is compelled to consider her pregnancy as a curse instead of a blessing, and has, in addition to the ordinary troubles of that state, to bear up against the agony of disappointed hopes, of affections misplaced and cruelly abused, to endure the present scorn of society and the anticipation of a still increasing shame, for which she is to find no "sweet oblivious antidote" of power to "pluck from the memory a rooted sorrow." Alas! no; but she dreads, as well she may, to experience in all its cold and stern reality that

"Every woe a tear can claim
Except an erring sister's shame,"

even from those who are otherwise good and kind, but who, too often, in this respect, allow their zeal for morals to extinguish their compassion and Christian charity.

How often has such a state of mind been followed by convul-

¹ Vide Burrows, p. 379.

sions, or, ending in insanity, has armed with the weapon of suicide¹ the once gentle hand of her, who, to use the words of W. Hunter,² "might have been an affectionate and faithful wife, a virtuous and honored mother, through a long and happy life; and probably, that very reflection raised the last pang of despair which hurried her into eternity." I have myself seen instances of such miserable results, and not long since one of a most deplorable character. Jörg, who has written expressly on the legal responsibility of females during pregnancy and parturition,³ lays too much stress on the psychological changes induced by pregnancy; and would, in consequence thereof, unwisely extend to pregnant women, and especially the unmarried, an exemption from responsibility, not merely as regards injuries inflicted on themselves, but he would exculpate them from crimes committed against others; thus laying down a doctrine as abhorrent, in my opinion, from truth and nature, as it is calculated to lead to the most serious consequences.

Devergie also formally discusses the question, "whether pregnancy can so disturb the intellectual faculties of a woman that she is unable to control her propensities;"⁴ and admitting the influence which that state not unfrequently exercises on the nervous system and moral constitution, he properly discredits the belief that it can so predominate as to lead her into the commission of crime; and he eulogizes M. Capuron for his opposition to a doctrine such as this, which he justly considers would, by taking away moral responsibility, be fraught with most disastrous results to society.

With respect to hysteria, although, in its ordinary or slighter forms, not, perhaps, properly deserving the name of mental disturbance, its more aggravated conditions are so closely allied thereto, that it would be extremely difficult to draw the line of distinction. "Cases of this kind," says Dr. Connelly,⁵ "approach near to insanity; and, indeed, a mind subject to the violent agitations incidental to the hysteric constitution cannot be considered

¹ Vide Trans. of Soc. for Improvement of Med. and Chirurg. Knowledge, vol. ii. p. 63; see also Philos. Trans. 1817.

² Med. Obs. and Enquiries, vol. vi. p. 270.

³ Die Zurechnungsfähigkeit der Schwangern und Gebarenden beleuchtet.

⁴ Médecine Légale, tom. i. p. 433. ⁵ Cyclopædia Pract. Med., vol. ii. p. 563.

as perfectly sane;" a state of which Sydenham¹ has given so admirable and graphic a description, in which he says the patients "observe no mean in anything, and are constant only to inconstancy;" "so unsettled is their mind, that they never are at rest." Of one fact, at least, my own experience and that of others,² afford sufficient evidence that, when the aggravated form of hysteria prevails throughout pregnancy, puerperal mania is much to be apprehended.

I have also observed, in not a few instances, that women who, at other times, have been the subjects of that slight form of mental unsteadiness which goes by the name of extreme nervousness, and is evinced in an unreasonable susceptibility of impressions from slight causes affecting their moral feelings, but without any perceptible lesion of the intellectual faculties, and constituting probably the simplest form of moral insanity, have had their state of mind greatly improved during pregnancy; but soon after the termination of that condition, have exhibited, for a time, a greater degree of mental disquiet than was habitual with them; which, however, again settled down into their ordinary state.

I desire now to observe that, in thus noticing some of the more remarkable phenomena occasionally displayed during pregnancy, it is not intended to imply that such are the *usual* concomitants of that condition; on the contrary, most of them are to be considered as rare occurrences, some of them remarkably so, and all as exceptions to the general rule, but, for this very reason, deserving of particular notice, as probably connected with a morbid state of the system either absolutely existing at the time (though perhaps not otherwise clearly appreciable), or about to be developed, as in the case of Mrs. Durant (see p. 44), whose memory of the whole time of her pregnancy was a complete void; my object being to point out forcibly, what experience seems to have fully established, that, during pregnancy, the system is in a state of unusual susceptibility, the activity of both the nervous and circulating systems being, at that time, greatly exalted, by which the female is rendered much more liable to be injuriously affected even by ordinary causes, and still more so, by any of a more im-

¹ Swan's Translation, ed. 1769, p. 414.

² Vide Burrows on Insanity, p. 378.

pressive kind; and that, knowing this to be the case, we may be on the watch, to counteract the influence of such a predisposition, and so prevent the accession of danger, by a proper regulation of the patient's habits, with regard to exercise, food, occupations, both mental and bodily, and attention to the state of the digestive organs; or, if unfavorable symptoms have already made their appearance, that, by a more correct appreciation of their origin, we may be enabled to adopt the treatment best suited to the circumstances. Neither was it my intention to represent pregnancy as a state of disease, but as one in which a great temporary alteration takes place in the condition of particular functions; not, however, of such a kind, or to such a degree, as could, with propriety, be considered as constituting disease; on the contrary, as already pointed out, several of the functional derangements naturally accompanying that condition, are subservient to new, but healthy actions necessarily associated with its favorable progress; thus, an increased activity in the circulation is required at a time when there is proceeding a rapid formation of new parts, and the vessels have to elaborate the materials both of structure and nutrition for a new being, and to exhale for its protection the liquor amnii; and even when this latter action of the exhalants is exerted in situations where it apparently assumes a morbid character, the result is often found decidedly beneficial, and relief of some more serious ailment quickly follows, as the removal of undue determination to the head, lungs, or uterus, on the occurrence of œdema of the feet and legs, which, as Denman¹ observes, may in some cases "be esteemed as a critical deposition upon the inferior extremities, of something superfluous, or injurious to the constitution." So, on the other hand, we very frequently find that the sudden, or premature cessation of some of those sympathetic disorders, as for instance of the sickness of the stomach, is but too certain an indication that the healthy action of pregnancy has been arrested, and that abortion is likely to ensue; hence, to use the words of the excellent writer just quoted, in the truth of which I concur, "It is a popular observation, confirmed by experience, that those women are less subject to abortion, and ultimately fare better, who have such symptoms as generally attend

¹ Introduction to Midwifery, p. 241.

pregnancy, than those who are exempt from them."¹ And it may be added, that if, with a few, pregnancy has deserved the name of a nine-month's malady, fully an equal number suffer little, or no inconvenience, and with some it is a period of decided improvement in health. Very recently, I was consulted by a lady, who never was otherwise than miserably thin and delicate until she conceived, and then she grew strong and fat; and M. Morel states that a patient of his, naturally of very delicate health, never felt strong or well except when pregnant; so that a marked improvement in her health was always, for her, a proof that she was pregnant.² Moreover, it appears, from experience, that women who bear children generally enjoy more even health and are less disposed to disease than those who lead a life of celibacy, or who, having married, remain unfruitful; so that Gardien seems to express no more than the truth when he says: "*Dès qu'une femme est grosse les probabilités de sa vie augmentent;*"³ and this is what we ought, *à priori*, to expect, because, child-bearing being the ordinance of an all-wise Providence, we should anticipate that the fulfilment of the duty thus ordained would conduce to the welfare of those on whom it has been devolved.

It seems in conformity with such a view, to believe, what, indeed, I think, experience has taught us, that pregnancy acts, in a great degree, as a protection against the reception of disease, and perhaps on the common principle, that, during the continuance of one very active operation in the system, it is thereby rendered less liable to be invaded, or acted on by another; thus, it has been observed, that, during epidemics of contagious diseases of different kinds, a much smaller proportion of pregnant women have been attacked than of others: but when attacked, they suffer severely; thus, when the cholera visited this country, the proportion of pregnant women who took the disease was very small; but all who caught it died, I believe, almost without a single exception. Gardien's experience led him to a similar conclusion; he says: "*Les femmes enceintes sont moins exposées à gagner les maladies contagieuses; mais lorsqu'elles en sont atteintes, elles succombent plus promptement.*"⁴

¹ Introduction to Midwifery, p. 212.

² Gardien, *Traité d'Accouchement*, tom. ii. p. 26.

³ Gardien, tom. ii. p. 30.

⁴ *Ibid.*

I think also I have seen sufficient to satisfy me that pregnancy does, at least occasionally, exercise another kind of influence over disease in the system, namely, of preventing its development during that state, although the infection may have been caught; as is proved by the disease showing itself immediately after delivery, as in the following cases:—

Mrs. W., when in the ninth month of pregnancy, was much about her brother, who was dangerously ill of malignant scarlatina; she seemed to have escaped the danger completely, but the day after her delivery, she was covered with the disease, of which she died in a few days; between the time of her exposure to the infection, and her delivery, there had intervened three weeks, during which she appeared to be quite well.

When Mrs. F. was in the eighth month of pregnancy, her husband had typhus fever, in which she assiduously attended him; after his recovery, she went to her father's house, some fifty miles from town, where she was delivered in due time, and immediately afterwards was seized with typhus fever, of which she died in eight days; between five and six weeks had elapsed between Mr. F.'s illness and her labor, and during that interval she seemed in perfect health.

In the month of November, 1854, I attended a young lady in her first confinement; previous to which she had both the lower extremities much enlarged by anasarca; but she appeared, in other respects, quite well, with one exception, which was, that she had such *soreness* of the abdomen, she found a difficulty in lying on either side: and when I passed my hand over the abdomen, she complained that the pressure hurt her everywhere.

On the 12th, she was confined, after a favorable labor, but the abdominal tenderness remained, and there was a peculiar doughy feel of the whole abdomen; next day, this was equally felt, but with little or no pain or fever, and a perfectly quiet pulse.

On the 14th, I found the insteps of both feet, but particularly the left, covered with well-developed erysipelas; her mother, who seemed very anxious about her, was present when I examined the feet, and on our reaching the drawing-room, said, "Doctor, isn't that very like erysipelas?" I said, "Yes, certainly, there is no doubt about it." "Dear me, sir, do you think she could have taken it from her husband?" She then, for the first time, informed

me, that some weeks before leaving home, to come to town for her confinement, her husband had a severe attack of erysipelas, during which she had assiduously nurse-tended him. Immediately on the appearance of the erysipelas on the feet, the abdominal symptoms began to decline, and, after two or three days, ceased to exist. I cannot but believe, that this lady caught the infection from her husband, during her close attendance on him, that it remained in abeyance until gestation was over, and was then developed. She recovered well.

It is, I believe, a matter of common observation, that when women who have been laboring under certain forms of disease happen to conceive, the morbid affection previously existing is oftentimes either greatly mitigated, checked, or even altogether suspended for a time, as has been frequently observed in persons affected with phthisis; though I must add, that the influence of pregnancy in cases of phthisis is a question on which a variety of discordant opinions have been given by high authorities. Andral's¹ conclusion, from his latest observations, is, "that in the great majority of cases the symptoms of phthisis are suspended, or at least remain stationary, during the course of pregnancy." Louis² says he is not "in a condition to determine whether pregnancy is, or is not, capable of retarding the progress of phthisis;" but he suggests that the fact might be, that several of the symptoms become somewhat more obscure during pregnancy, without any check being, in reality, given to the advance of the disease.

My own experience would lead me to the conclusion, that if a woman predisposed to phthisis, but in whom the disease has not actually become developed, prove pregnant, she is likely to be benefited thereby; and I think I have seen life thus prolonged, for years, in several instances; but, on the other hand, if pregnancy takes place in a woman already actually in consumption, or if this disease supervene on pregnancy, the fatal issue is as likely to be accelerated as postponed, or, perhaps, even more so.

Several years since, I had a patient under my care affected with white swelling of the elbow-joint, which had gone to a great length, and was very little benefited by treatment, when, all of a

¹ Clinique Médicale, tom. iv. p. 367.

² Researches on Phthisis, Walshe's Translation, pp. 279, 280.

sudden, a very rapid amendment was observed. On questioning the lady, I found that she had reason to think herself about six weeks pregnant, which was the fact; from that time, the cure advanced uninterruptedly, so that before the end of her gestation, the arm was perfectly well, and has so continued ever since, she having, in the interval, borne several children.

On the other hand, it is not to be forgotten, that occasionally the natural sympathetic affections may become excessive, and be very injurious, or even destructive of life, as, for instance, when total exhaustion and death have resulted from incessant vomiting, or when the violence of that act has caused the rupture of internal organs, as the uterus or liver; and, moreover, the influence of pregnancy in modifying or preventing other active processes proceeding in the system at the same time, is sometimes detrimental to the female, as when in cases of fractures the formation of callus and the reunion of the bone is prevented, or at least retarded, until after delivery;¹ a consequence, however, which is not to be regarded as constant, but only of occasional occurrence: and probably to the same cause it may be ascribed that the cure of syphilis and of paralytic affections is so often rendered imperfect during that condition.

There is a fact connected with the history of pregnancy, when complicated with disease, which has always appeared to me one of great interest; when a pregnant woman labors under a malady which is to end fatally before the natural completion of her gestation, it almost invariably happens that a short time, generally a day or two before her death, which, in most cases, is delayed until the child has acquired such a degree of development as to be capable of living if born, labor is established, and delivery accomplished. I have so frequently observed this occurrence, that I cannot but regard it as a pre-ordained arrangement to prevent the unborn child from participating in the decease of the mother.

¹ See cases by Mr. Wardrop, *Med.-Chir. Trans.*, vol. v. p. 359; and Mr. Alanson, *Med. Obs. and Enq.*, vol. iv. p. 410. Meckel, after enumerating different other causes, says: "Enfin la concentration de l'activité plastique sur un autre organe; c'est cette dernière circonstance qui fait que les fractures ne guérissent point pendant la grossesse et l'allaitement, quoiqu'il n'en soit cependant pas toujours ainsi."—*Manuel d'Anatomie*, tom. i. p. 337.

There is a simulation of disease which occasionally accompanies pregnancy and depends apparently on disturbance of the nervous influence, which sometimes very remarkably affects the functions of some of the organs of the external senses, in which no appreciable organic change can be at the time discovered; and that none such does really take place, seems sufficiently evident from the fact, that the affection lasts only during gestation. Thus, instances of temporary amaurosis induced by pregnancy are by no means uncommon.¹ I saw a lady thus affected; she could see certain objects distinctly, as a line drawn on paper; others appeared confused, and some she could hardly discern at all: occasionally, she imagined she saw objects which were not present, as a person crossing the room, or flower-pots, or bunches of flowers on her table, when nothing of the sort was there. Salmutius relates a case in which a lady became blind every time she was pregnant, and recovered her sight as soon as she lay in. Beer² saw a young Jewess, who at the very beginning of her first three pregnancies, which followed each other quickly, regularly became amaurotic, and continued blind till after delivery; but on the third occasion she did not recover her sight. Chambon ascribes these affections to plethora, but such an explanation is scarcely consistent with the occurrence of amaurosis from protracted, or undue lactation, when the constitution is in a state of great debility and exhaustion, two well-marked instances of which I saw in two sisters, who quickly recovered their sight, by weaning their children. Dr. Matthews, of Moate, has just informed me of the case of a lady, who, when five months pregnant, for the first time, sustained total loss of voice, which she recovered at the time of her labor. Gardien notices this part of our subject fully,⁴ and mentions a variety of affections which I have not met with. Dr. Bennewitz has detailed the particulars of a case, in which a young woman was, in three successive pregnancies, affected with diabetes mellitus; which, each time, completely ceased on delivery, but again returned when she became pregnant.⁵

¹ Vide Mason Good, *Study of Med.*, vol. iv. p. 247; Cooper's *Surg. Dict.*, art. *Amaurosis*.

² *Cent.*, iii. obs. 27.

³ *Lehre von den Augerkrankheiten*.

⁴ *Traité des accouchemens*, vol. i. p. 437, and vol. ii. p. 76.

⁵ Osann's *Clinical Report for 1823*. *Edinb. Med. Journ.*, vol. xxx. p. 217.

Since the publication of the former edition of this work, I have seen several instances of hæmoptysis occurring only during pregnancy, and unconnected with any pulmonary disease; and when we come to the consideration of uterine hydatids, Chap. XI., I shall have occasion to relate a case of this kind, involving details of very great interest.

In conclusion, if we take a review of former times, a conviction will be forced upon us not very flattering to our fancied superiority above our ancestors, in our watchful care of our women when pregnant, or in the legal provisions enacted for their protection and comfort; in both of which respects, the laws and customs of the earliest periods seem to have greatly excelled, both in justice and humanity, those which, even at this day, prevail amongst us. The Jewish law¹ decreed, that if two men quarrelling injured a pregnant woman so as to make her miscarry, she not suffering in health thereby, they should be liable to punishment, at the discretion of her husband, and to such fine as the judges should determine; if she sustained bodily harm, then, the law of retaliation was to be put in force; but if she lost her life, the punishment of death was awarded: and although the Jews were, in general, strict observers of the ordinances of the Mosaic law, they allowed pregnant women the use of forbidden meats, lest the child might suffer from their longings. A law of Lycurgus required the citizens in public places, to turn aside and make way for them; and at Rome, they were exempt from the necessity of standing aside, or mixing with the crowd to make way for the passage of the consuls or others in authority; but, on the other hand, harsh treatment was by many considered justifiable and proper towards those who were pregnant, but unmarried; religion and the progress of civilization have, long since, produced a more just appreciation of their natural rights in this respect; and while, on the one hand, the prerogatives of pregnant women have been wholesomely restricted, a more reasonable allowance is made by mankind, in general, for the frailty of our nature, and the errors of passion; and its victims obtain more of the sympathy and kindly consideration, of which they often stand so grievously in need.

¹ Exodus, chap. xxi. ver. 22, *et seq.*

The Athenians spared the life of the murderer who took refuge under the roof of a woman with child, and by the kings of Persia, they were each presented with two pieces of gold. The Roman laws allowed them the same privileges as did those of France; in the code of which country, at the close of the last century, an enactment existed¹ which forbade that a pregnant woman should be brought to trial; the humanity and propriety of which provision we cannot too much admire. Although not aware of the grounds on which such a prohibition was framed, I can see two excellent reasons for its adoption, first, lest the mental disturbance arising from the state of the nervous system should, in any degree, render the accused less capable of defending herself; and, secondly, lest the agitation and terror excited by her trial might have an injurious effect upon her offspring; and such, I find, is the light in which the matter is viewed by Raige Delorme.² By the British law, no such merciful exemption is provided; a pregnant woman may be tried for her life, and if found guilty, executed, and with her, her guiltless offspring, except it can be made appear that she is not only pregnant, but quick with child. When examined as witnesses, and under other circumstances, pregnant women frequently refuse to take an oath, and I believe their objection is generally allowed in unimportant matters, but of the grounds of this usage, I am not aware.

CHAPTER II.

INVESTIGATION OF THE SIGNS OF PREGNANCY.—LEGAL AND SOCIAL RELATIONS.—DIFFERENT SOURCES OF EVIDENCES OR PROOFS OF THAT STATE.—CLASSIFICATION OF SIGNS.

“NUNQUAM forte magis periclitatur fama medici, quam ubi agitur de graviditate determinanda: undique fraudes, undique sæpe insidiæ, struuntur incautis.” “Omnes enim, qui de graviditatis signis scripserunt, quamvis longo artis obstetriciæ usu celebres fuerint,

¹ See Foderé, Méd. Lég., tom. i. p. 428, *et seq.*

² Dict. de Méd., tom. x. p. 449.

unanimi ore fatentur, primis præcipue mensibus, signa graviditatis satis incerta esse," was the conclusion to which Van Swieten came, more than a hundred years ago; and now, that we have had the experience of more than another century to guide us, I believe there will be found few prepared to refuse their assent to the truth of his assertion, which expresses the opinion, not of its author only, but of all who, before, or since his time, have well considered the subject, and candidly stated the result of their experience. Still, I am convinced that many of the errors which have been committed, both in theory and practice, have arisen, far less from the acknowledged difficulty of the investigation, than from the want of proper information, and the careless way in which examinations are conducted; for, although we shall occasionally meet with cases so complicated that the best exertions of our judgment, assisted by experience and the possession of the requisite dexterity in the different modes of examination, will still leave us unable to do more than arrive at a result so involved in doubt, as to forbid our attempting to hazard anything approaching to a decisive opinion, such cases are infinitely less frequent of occurrence, than one would be led to conclude, who judged from the number of mistakes made on the subject; such extreme difficulty can, in general, only be encountered during the early months, and, even then, an examination conducted with sufficient attention and care will always enable the practitioner *to avoid giving an erroneous opinion*; and where blunders have been committed at more advanced periods, they have always, in my opinion, been caused by ignorance, want of care, prepossession, or a perverse and short-sighted reluctance to acknowledge, frankly, the inability to decide positively, under circumstances of unusual obscurity: which avowal, exclusive of the imperative necessity of acting honestly, is surely much less humiliating, as well as less likely to detract from our reputation, than to venture, precipitately, on an opinion for which, we must know, we have not sufficient grounds, or through a vain affectation of superior discernment, to pretend to an accuracy of knowledge which the circumstances before us really do not admit of, and which, the event is to belie.

At all events, one thing is certain; few questions in medicine, whether considered in a merely professional point of view, or,

still more especially, in reference to their relations with criminal or civil law, impose on the medical examiner a more delicate duty, or a more trying responsibility, than the determination of the existence, or absence, of pregnancy; placed before him, as the question not unfrequently is, under circumstances by which all its natural difficulties are increased an hundred-fold. It usually happens, in such cases, that he cannot rely on a single statement made by the individual who may be the subject of examination; but, on the contrary, he must be prepared for every species of falsehood and misrepresentation. And yet, on the correctness of his opinion, frequently depend the claim to fair fame, virtue, and honor; the succession to property, and the rights of legitimacy; the judicious treatment of disease; and, in criminal cases, the condemnation, or acquittal, of one arraigned for a capital offence, or the preservation, or destruction, of the unborn innocent. How deeply anxious, then, should we be to possess ourselves of such information on the subject as may enable us to free the innocent from aspersion, or to detect the vicious, and that, when called upon to assist the right administration of the law, we may be competent to give an opinion, which, while it promotes and satisfies the great ends of justice, shall also be consistent with the milder blessings of humanity and mercy.

This question, considered only in its social relations, is often invested with a deep, and sometimes most painful interest; and so long as the feeling pervades our land (and may it ever remain strong amongst us), that our women should not only be accounted pure, but above suspicion, the means of detecting fallacies, exposing errors, and ascertaining truth, on the subject of pregnancy, must have a paramount value and importance in our estimation. I subjoin two cases in illustration, and I think it would be impossible to overrate, in either of them, the amount of mental misery and shame unjustly entailed on the subjects of them.

A well-educated young woman, Anne W—, mistress of an infant school, established by a family of rank and fortune, in one of our midland counties, was observed to be large in her abdomen, and to exhibit several symptoms of deranged health; in consequence of which she was visited by a medical man, who discovered, in the abdomen, a tumor as large as, and in other

respects resembling, a gravid uterus of six months; but the catamenia were declared, but not believed, to be quite regular, nor were there present the mammary changes indicative of conception; but she was pronounced pregnant, and another and more senior practitioner confirmed, in the strongest terms, the opinion already given, the truth, or possibility of which, the young woman most solemnly denied: the family, under whose patronage she had hitherto lived, entertained the highest opinion of her morals and veracity; but the medical opinion was so strong and unqualified, that she was removed from her situation, and sent to town, never to return, except she brought, from me, a certificate that she was not in the condition attributed to her.

On examination, I readily discovered in the abdomen a fibrous tumor, but no symptom of pregnancy: she was actually menstruating at the time she came to me; the breasts were flaccid and unchanged. I gave the necessary certificate, and, after remaining a month under my observation, she returned home, and was, within a year, married to a young man who had been attached to her before the imputation had been cast on her character; unfortunately for her, she soon afterwards proved pregnant, had a very severe labor, followed by inflammation which ended in death.

The second case, above alluded to, is related by Dr. Gunning S. Bedford,¹ Professor of Obstetrics in the University of New York, and its details are of the most touching and painful kind. Dr. B. was requested to visit a young lady, whom he found far advanced in phthisis, and whose first words to him were, "I am glad to see you, on my father's account, for he will not believe that I cannot yet be restored to health; but life has lost all its charms for me; and I long only for the repose of the grave." Her "sad eventful history" was this: Her father was a clergyman of high standing in the English Church, until obliged to leave both home and country by the unfortunate circumstances connected with his child. Early in life, she had lost her mother, and had been almost entirely educated by her father; she did, indeed, "eat of his own meat, and drank of his own cup, and lay in his bosom, and was unto him as a daughter." When eigh-

¹ Clinical Lectures on Diseases of Women, &c., p. 50.

teen years of age, an attachment was formed between her and a young barrister of respectability and promise, and they became engaged to marry. Soon afterwards, she began unaccountably to decline in health; she became irregular in her menstruation, had more or less constant nausea, loss of appetite, inability to sleep, feverishness, and an uncontrollable dislike to society. In addition to these symptoms, there was a marked alteration in her personal appearance; her abdomen became enlarged, and the breasts increased in size: these changes attracted the attention of some of her female acquaintances, and the rumor spread rapidly that she was pregnant.

These reports reached the gentleman to whom she was affianced, and he, without further inquiry, formally requested to be released from his engagement, which was immediately assented to; and the young lady, strong in conscious innocence, and relying on the mercy of heaven to guide and shield her, in this her hour of trial, requested that a physician should be sent for, in order that the nature of her case might be fully ascertained. This wish was immediately complied with, and after an investigation of her symptoms, the physician informed the father that she was, undoubtedly, pregnant. He indignantly rejected the assertion, and insisted on a consultation: this was held, and the opinion already given was confirmed; and it was decided that they should leave England, and seek to hide their shame in America. On the passage out, she became extremely ill, and the advice of a medical man who was on board was sought. He found her vomiting excessively from sea-sickness, and told her father that there was danger of premature delivery, forming his judgment, I believe, only from her appearance. On her arrival in America, she was visited by Dr. Bedford, to whom her whole story was related; he examined her with great care, and ascertained, beyond a doubt, that she was not pregnant, but that she was in the last stage of consumption. In another month, she was beyond the reach of slanderous tongues, forever; and an examination after death proved that a large fibrous tumor was the cause of all the symptoms which had brought on her such unmerited obloquy and mental suffering, all which she bore with almost angelic gentleness and patience. It is true, that virtue, purity, and truth

triumphed in the end; but the ordeal was too much for nature's strength—

"The saint sustained it, but the woman died."

On the other hand, the instances which present themselves are unfortunately but too frequent, in which the unmarried female, either yielding to the influence of passion, or made the reluctant victim of the unprincipled seducer, and becoming pregnant, an investigation as to her real state is sought for, in the hope of inducing marriage, or perhaps for the purpose of influencing a jury in the assessment of damages; or again, an attempt may be made to *conceal* pregnancy by the unmarried, or even by the married under certain circumstances; as in the case of a wife's separation from her husband, or his casual absence, in order to avoid disgrace in society, or, more dreadful still, to enable her, with impunity, to destroy her offspring.

The pertinacity and apparent innocence with which pregnancy is denied, under such circumstances, would be quite incredible, and almost certainly mislead us, were we not taught scepticism, from experience having so often disclosed to us that, in the indignant burst of offended chastity, and the deep asseveration of unspotted purity, we were, after all, to detect the solemn protestation of a lie. I was once called to see an unmarried patient, whom I found in labor, and even when the feet of the child were beyond the external parts, she resolutely denied that she was pregnant; and afterwards persisted that she never had incurred the risk of impregnation, though it was ascertained that she had lain-in twice before.

A medical friend of mine was called hastily to the house of a patient to see a young woman, who, being taken very ill with a colic, as she said, had retired to bed, and was soon afterwards delivered of a child, whose cries disclosed the truth; when questioned, she requested the child might be taken away, as it was a trick played on her by some of her fellow-servants, who, wishing to injure her, had procured a child, and put it into her bed, while she was asleep: the cord was still undivided, and the placenta retained in utero.

Some time since, I saw, in consultation, an unmarried lady with a tumor in the abdomen and suppressed menstruation, and so

artfully had she concealed her real situation from two or three well-informed medical men, and misled them, that she had been treated with mercury to salivation, and afterwards with iodine, bled, leeches, and blistered, both on the abdomen and mammae. We could not discover a single symptom of ill-health; but she was in the eighth month of pregnancy.

Castroverde has published the particulars of a case, in which both husband and wife, persons of very high rank, acknowledged to him that they had endeavored to lead him astray about the lady's pregnancy, in the hope that he would order remedies for the accompanying amenorrhœa, which would cause abortion: their reason for thus conspiring to deceive was, that the lady had previously had a very dangerous labor, and was afraid of encountering another, having been told that, if she was to be delivered again, it would almost certainly cost her her life; she, however, did not miscarry, and had a favorable and easy labor.¹

On the other hand, pregnancy may be *feigned*, in order to gratify the wishes of a husband, or relatives, to extort money, to compel marriage, to deprive the lawful heir of his just rights of succession, or to delay the execution of the sentence of death.

In this class of cases great difficulties are purposely thrown in the way of the practitioner, in addition to those really inseparable from the investigation. The woman, having a special, and sometimes a vitally important object to gain by making out her case, takes every possible means to deceive and mislead him, and to prevent his making such an examination as would enable him to arrive at the truth: fortunately, however, they generally overstate their case, or place symptoms in a disorderly succession, so as to excite suspicion in the mind of one practised in such inquiries. If an examination is proposed, they sometimes decline it angrily, or say they are afraid to submit to it, lest it should injure them, "they are so very nervous;" or they would not themselves have any objection, but their husband "has such an aversion to anything of the kind." In a case which I saw some time since, this objection was strongly urged by the husband as well as the wife, both having conspired that she should feign pregnancy for a sinister purpose, having reference to another family.

¹ See *Journal des Connaissances Médicales*, Juin, 1835.

Some, again, will assent to the examination with apparent readiness; but will take care so to embarrass and impede the examiner, as effectually to prevent his obtaining any satisfactory information. One will cry out, the moment the attempt is made to introduce the finger into the vagina, and declare that she cannot endure the pain; another will place herself in such a position, by turning on her back, or twisting about, or stretching down her legs, that a proper examination is impossible.

Others effectually frustrate our attempts to examine for the uterine tumor through the abdominal wall, by declaring that the pressure of the hand causes them pain, or by holding their breath, and rendering the muscles tense and rigid:¹ and some avail themselves of the power so remarkably displayed by the woman mentioned by Dr. Lowder, who could so exactly imitate the motion of a foetus in utero, that good judges found it very difficult to discriminate. Joanna Southcott also was an adept in this trick. I have met with this simulation many times, but in all the instances under my observation, I have no doubt it was involuntary, as it occurred in cases where there was no motive to practise deception.

In some cases of feigned pregnancy, the deception has been strengthened, in a remarkable degree, by the apparent presence in the abdomen of a distinct round tumor, which, as the event proved, had no real existence; as in the case of the virgin prophetess above referred to, in whom it was supposed to be the bladder which she managed to keep in a state of distension.

It may be observed here, that many of these observations, *mutatis mutandis*, will equally apply to those whose object is to conceal their pregnancy: while the one class wish to prevent our ascertaining decisively an existing fact, the others are equally desirous of making us believe in the presence of a state which does not exist; both having, for the accomplishment of their purpose, the common object of preventing us from obtaining satisfactory evidence.

Pregnancy may be *imagined*; and, in this form, the idea not unfrequently, as we shall see hereafter, when we come to consider the subject of spurious pregnancy, takes such entire and forcible

¹ See Schmitt's 32d case, 1st div.

possession of the mind, and the woman has such a sincere and complete moral conviction of her state, that a doubt expressed on the subject, she considers as little less than an insult to her understanding, or a proof of total ignorance in those who fail to discover it, or presume to deny its existence. In these cases, also, this unreal abdominal tumor (the nature, or cause of which is enveloped in great obscurity) has been frequently met with, and others as well as myself, have had occasion to observe that if the examination of the abdomen be gently persevered in for some time, and the patient engaged in conversation, so as to occupy her attention with some other matter, the supposed tumor has been found gradually to soften down and disappear; and we are indebted to Dr. Simpson for having ascertained that if the patient be put fully under the influence of chloroform the same result takes place; but, no sooner has the anæsthetic influence passed away, than the phantom tumor is again found in its former situation.

Every one remembers the case at Edinburgh, in which Mr. Lizars laid open the abdomen to remove a tumor which did not exist. Heim's case at Berlin is almost equally well known (see p. 66); and Dr. Gooch saw a case at Guy's Hospital, in which, after opening the abdomen, nothing was found but flatulence and fat.¹

By the law of this country, a woman capitally convicted may plead pregnancy in bar of execution, and medical men are appointed to determine the question whether the culprit is really with child or not, and, if she is, whether she be *quick with child*, for pregnancy alone will not save her. This rule, we may observe in passing, is one of the most monstrous and barbarous features of our penal code. When so stating, in the former edition of this book in 1837, I was aware that, by the letter of the law, the tribunal appointed to decide such a question was "a jury of matrons;" but I was also aware, that this trial by a jury of matrons had been found not alone so unsatisfactory, but such a mockery of justice, that the judges had, in several instances, referred the question, at once, to medical men, as the only persons competent to decide in a matter of such difficulty and awful im-

¹ Diseases of Females, p. 230.

portance; and where their decision affirmed pregnancy, though without adding "quick with child," the judges had acted thereon, and the convicts were respited. I did therefore hope, and believe, that we had done with the jury of matrons, and with the distinction between merely pregnant and quick with child: but I have found, with astonishment and regret, this hope disappointed in both respects, and the old system acted on to its fullest extent, and this in enlightened England, within the last few years.

On the 25th of September, 1847, a wretched epileptic woman, Mary Anne Hunt, was tried before Baron Platt, and, having been found guilty of murder, she pleaded pregnancy in stay of execution; whereupon, the judge ordered a jury of matrons to be empanelled, which having been done, he informed them that "*they were summoned to that court as a jury of matrons, to perform a very solemn duty, which was to ascertain whether the prisoner, then standing at the bar, was big with a quick child or not. They would use their best skill to ascertain that fact, and, having done so, it would be their duty to return a verdict on the oath they had taken. If they should think it necessary to have the assistance of a surgeon, they were at liberty to do so.*" It appears they did not think such assistance necessary, and, *in about half an hour*, returned a verdict that the prisoner was not quick with child, that she had not a living child within her. On which announcement, the judge said: "Let the prisoner be removed; the law must take its course." Terrific words! stern prelude to an ignominious death, for the mother, the just reward of her wickedness! but on what ground could be justified the judicial murder of the unborn innocent, had this sentence been carried into execution? which, however, fortunately for our humanity and justice, it never was. Strong representations were made on the subject to the Home Secretary, who directed that she should be examined by three medical men, who pronounced her to be pregnant. Her execution was therefore stayed; on the 25th of December she fell into labor, and on the 28th she was delivered, in the prison, of a fine, healthy, *full-grown*, male child, and her sentence was commuted to transportation for life. It is almost superfluous to observe that, when the jury of matrons, on the 25th of September, declared this woman not to be quick with child, she had absolutely *completed six months* of her pregnancy. Then, once for all, and forever, let us have done with the jury of

matrons, and with the wretched relic of theological ages, which would have us believe the monstrous absurdity, that the foetus is not as much alive before, as after quickening.

It is well known that there are met with, from time to time, cases of pregnancy, even at advanced periods, which baffle the most careful investigations made by well educated and experienced medical men; and shall a question of this kind, under circumstances where its decision may affect the life of both mother and child, be intrusted to a committee of gossips, though called by the courtesy of the law "discreet women?"¹

How infinitely superior, both in morals and in mercy, are the laws of France² and Scotland,³ which ordain that if a woman be proved to be pregnant, whether she has quickened or not, she shall not be executed until after her delivery; in the latter country, she is entitled to have even her sentence delayed; and in France, the privilege formerly allowed under such circumstances was still greater. In 1795,⁴ a law was passed, which ordained that no woman accused of a capital crime, should be brought to trial until it was properly ascertained *that she was not pregnant*;⁵ and, in conformity with this, several decisions were reversed, where it appeared that the female had not been properly examined; and in more than one instance, the sentence of death was annulled, because it was discovered that the woman was pregnant at the time of being put upon her trial.⁶

Connected with such investigations, some very melancholy mistakes have occurred, by which the lives of unborn infants have been sacrificed. Riolin relates the history of a woman, named Genevieve Supplice, who, after being hanged for robbery, was publicly dissected by him, at the school of medicine, and was found pregnant of a child of five months, contrary to the opinion of the surgeons

¹ Several illustrations of this matter might readily be cited, as the case of Catherine Smith, tried at Carlow in 1830, and that of Mary Wright, tried at Norwich, in 1833; but I cannot afford space for the details of each, which is the less necessary, as they are fully given, with some excellent observations, in Dr. E. Kennedy's work on the Evidences of Pregnancy, pp. 189, 269.

² Code Pénal, art. 27.

³ See Alison's Practice of the Criminal Law of Scotland, p. 654.

⁴ Twenty-third Germinal, year 3.

⁵ See p. 55, and cases in the Chapter on Quickening.

⁶ Foderé, Méd. Lég., tom. i. p. 428, *et seq.*

and midwives who had examined her.¹ Mauriceau also mentions having seen, at Paris, in 1666, a miserable example of this kind, in a woman who was hanged, and afterwards publicly dissected: she was found to be pregnant four months, notwithstanding the report of the persons who had visited and examined her by order of the judge, before her execution, and pronounced that she was not pregnant, *being deceived by the fact of her continuing to menstruate*. This matter caused a great sensation of disgust and horror, and was reported to the king and his court, and, in consequence, a severe censure was passed on the persons who, by their ignorance, had caused the untimely execution of the unfortunate woman, with whom had perished also her infant, innocent of its mother's crime.²

During the French Revolution, a countess who was sentenced to the guillotine declared herself pregnant, and was, in consequence, examined by some of the most experienced midwives in Paris, who declared her plea to be false; but, after execution, she was found, on dissection, to have been *far advanced in pregnancy with twins*.

If we fancy that the progress of knowledge and modern improvement exclude the idea of such an error at the present day, we shall soon be undeceived; and for one equally great, though of an opposite kind, we need only refer to the account of the Caesarean operation performed at Berlin, in 1828, by a celebrated surgeon, and in presence of several obstetric professors, many of whom examined the woman, who appeared healthy and about twenty-two years of age, but was pronounced to be carrying an extra-uterine foetus, the movements of which were supposed to have been felt by some of the professors, and the woman herself thought so too; one only of those present considered the symptoms not sufficiently clear to justify such an operation, which, however, was persisted in, and performed; but *no foetus was to be found, nor tumor, nor even enlargement of any viscus*.³ This case is the more remarkable from being under the care of Heim, at whose urgent desire the woman submitted to the operation. Heim

¹ Anthropog., lib. vi. ch. 2.

² Maladies des Femmes Grosses, tom. i. pp. 71, 72.

³ Lond. Med. Gazette, vol. ii., for 1828, p. 380.

wrote a special essay on extra-uterine pregnancy, in the diagnosis of which he was supposed to have attained an almost infallible accuracy, having, as he asserts, met with thirty-three cases of the kind, during a practice of sixty years. Heim's own account of this remarkable case will be given in the Chapter on Spurious Pregnancy.

Or, let us turn to the fact related by Capuron,¹ of which he was an eye-witness. A woman was admitted into La Charité, declaring herself dropsical. She was examined by Corvisart, who thought he felt a little foetus towards the left iliac region, and pronounced the case to be one of encysted dropsy and extra-uterine gestation. Baudelocque was now called in, examined her, and declared the appearance of pregnancy was caused by an enormous scirrhus of the uterus; two or three weeks afterwards, the woman gave birth naturally to a very large, vigorous, and healthy child.

So lately as the year 1846, ovariectomy was performed in England, on a woman whom the result proved to be, at the time of the operation, in the fourth or fifth month of gestation; several hospital physicians and surgeons having examined her, and come to the conclusion that there were "no grounds whatever for suspecting that she was pregnant;" the day but one after the operation, she gave birth to a foetus which "was alive when born."² I shall again refer to this remarkable case more fully when speaking of pregnancy complicated with ovarian tumors.

A proceeding may take place at common law, "where a widow is suspected to feign herself with child in order to produce a supposititious heir to the estate, and defraud the lawful heir. In such a case, the heir presumptive may have a writ *de ventre inspiciendo*, to examine if she be with child or not, and if she be, to keep her under proper restraint, until she is delivered. But if the widow be, upon due examination, found not pregnant, the presumptive heir shall be admitted to the inheritance, though liable to lose it again on the birth of a child within forty weeks from the death of the husband."³ But his right could not, on any pretext, be any longer suspended.

¹ Principles, &c., des Accouch., p. 52, Brussels ed.

² Med.-Chir. Trans., vol. xxx. p. 95. ³ Blackstone, vol. iv. pp. 394, 395.

A celebrated case of this kind, which attracted great attention, occurred in the family of Sir Francis Willoughby, who died seised of a large inheritance. He left five daughters (one of whom was married to Percival Willoughby), but not any son. His widow, at the time of his death, stated that she was with child by him. This declaration was evidently one of great moment to the daughters, since, if a son should be born, all the five sisters would thereby lose the inheritance descended to them. Percival Willoughby prayed for a writ *de ventre inspiciendo*, to have the widow examined, and the sheriff of London was accordingly directed to have it done. He returned that she was twenty weeks gone with child, and that within twenty weeks, *fuit paritura*. "Whereupon, another writ issued out of the Common Pleas, commanding the sheriff safely to keep her, in such an house, and that the door should be well guarded; and that, every day, he should cause her to be viewed by some of the women named in the writ (wherein ten were named); and when she should be delivered, that some of them should be with her to view her birth, whether it be male or female, to the intent, there should not be any falsity. And upon this writ, the sheriff returned, that accordingly he had caused her to be so kept, and that, on such a day, she was delivered of a daughter."¹

This is a mode of proceeding seldom resorted to, but it is still recognized by our law, and was had recourse to a few years since, in the English Court of Chancery, in the case of Marston and Fox, of which the following were the facts: Mr. Fox, of Uttoxeter, aged about sixty, died in May, 1835, leaving a widow, to whom he had not been married more than six weeks. The widow announced herself to be with child, and entered a *caveat* to the probate of the presumptive legatee, Mr. Marston; whereupon, the latter immediately applied for a writ *de ventre inspiciendo* to ascertain the lady's pregnancy. The lady, however, became alarmed by what she heard about the nature of the examination,² and

¹ Croke's Elizabeth, p. 566. See also in the matter of Martha Brown *ex parte* Wallop in Brown's Chancery Cases, vol. iv. p. 90; and *ex parte* Aiscough, Peere Williams' Reports, vol. ii. p. 591.

² Which certainly must be as formidable and revolting to the feelings of the female, as it is repugnant to our notions of propriety and decency; the ancient writ runs thus: "Tibi precipimus quod assumptis tecum duodecim discretis et

petitioned the court not to grant the writ, which it was argued was not called for, as it presumed fraud on the part of the female; but this was overruled by the Vice-Chancellor, who held that suspicion of fraud was not necessary, and that the mere assertion of pregnancy was sufficient to support the application. Mr. Marston did not insist on a compliance with the forms of the ancient writ, but merely that the lady should be examined by professional persons selected by him; but as Mrs. Fox would not consent to this, the conditions prescribed by the old law were held to be the only alternative. The widow put in a number of affidavits to avert the law process, and stated that, in consequence of the recent death of her husband, and many other circumstances which had subsequently taken place, her mind was in such a state, as to render her unable to undergo the examination required by the writ; the medical attendant of the family deposed that he had examined her, and believed her to be pregnant, and further added his opinion, that the kind of examination prescribed by law would be likely to do injury to her and the child; but that, if two months were allowed to elapse the doubt and danger would be removed. Other witnesses deposed that Mrs. Fox was a delicate woman, and a person of modesty. Under these circumstances the Vice-Chancellor, who said that from reading all the affidavits, he was satisfied that there was strong ground for believing the lady to be with child, thought it best to let the matter stand over for a month, by which time, further proceedings might be unnecessary. At the end of that time, however, the parties not being likely to agree, and two affidavits from medical men being put in, to the effect that Mrs. Fox was now in the fifth month of her pregnancy, which, however, did not satisfy the counsel on the opposite side, the court made a final arrangement. The Vice-Chancellor said that there was no doubt the applicant had a *right* to the writ; but that the lady, on the other hand, did not deserve to be treated with the severity of the ancient process.

He, therefore, adopted a middle course, and left it to the master

legalibus militibus et duodecim discretis et legalibus mulieribus de comitatu tuo, in propria personâ tuâ accedas ad præfatam R. et eam, coram præfatis militibus, videri, et diligenter examinari et tractari facias, per ubera et ventrem, in omnibus modis quibus melius certiorari poteris, utrum impregnata sit, necne," &c.—Register Brevium, 227.

to appoint two matrons, who, with a medical man on each side, should visit Mrs. Fox once a fortnight, giving her two days' notice previous to each visit.¹ The lady was afterwards delivered of a son and heir.

A case, of nearly a similar kind, occurred in this city some years ago; the lady had been about four months married to an elderly, and, as it was asserted, impotent man, when he died; having, before his marriage, made an arrangement of his affairs in favor of his son by a former wife; on his death, the son proposed to take possession of the property at once, to which the widow objected, saying that she was pregnant, and had a claim in right of her child. It was agreed between the parties, that the existence of pregnancy should be determined by reference to medical men chosen on each side, and the writer was retained by the heir: but before anything further was done, the lady contrived to effect a sale of the greater part of the property, and, appropriating the proceeds to her own use, disappeared, leaving the parties concerned to settle the matter as they best might. The event proved that she was not pregnant.²

There is another case where the court has interfered, on proof of the existence of pregnancy being brought before it, and that is, where a female in this situation is imprisoned. Thus in the case of Elizabeth Slymbridge,³ "upon suggestion that she had been imprisoned for divers weeks, and was with child, and would be in danger of death, if she should not be enlarged," Sir Edward Coke, the Chief Justice, admitted her to bail to prevent the peril of death to her and her infant, and in giving his opinion he quotes a similar case which happened in the 40th of Edward III. The editor remarks, that these cases are cited as extraordinary instances. The last case is mentioned in Coke upon Littleton, 289, *a*. The record states, "*Quia eadem Elena pregnans fuit, et in periculo mortis, ipsa dimittitur per manucaptionem ad habendum corpus,*" &c.

¹ The above details are extracted from a very well written article in the Lond. Med. Gazette for Aug. 15, 1835, p. 697, and the announcement of the lady's delivery appeared in the same journal for Nov. 7, p. 191. The legal relations of this part of our subject are very well set forth in Mr. Smith's notes to Dr. E. Kennedy's *Evidences of Pregnancy*, p. 277.

² See Schmitt's *Cases of Doubtful Pregnancy*, first division, cases 32 and 33.

³ Croke's *James*, p. 358.

When proceeding to an investigation of this kind, we must recollect that the signs, or proofs, of pregnancy are to be collected from various, and widely different sources; and, moreover, that, of some of them, we can have no evidence, except from the report made to us, while of others, we can judge by the changes existing before us, and cognizable by our senses. The following are the chief of these signs, and of the sources from which evidence is to be collected:—

1. Certain affections of the constitution induced by pregnancy, which are the result of the new action which has commenced in the uterus; such as suppression of the menses, generally increased irritability of the nervous system, evinced in capriciousness of temper, or perhaps in the production of erratic pains, as in the face and teeth, greater activity in the circulating system, and especially in the exhalants, giving rise to œdema and other forms of dropsical effusions; alterations in the countenance from absorption of the fat, &c.

2. In consequence of the irritation induced in the uterus, there is a train of sympathies excited in other organs, affecting either their physical constitution or their peculiar functions: such, for instance, are the changes produced in the breasts, by which their size is increased, with tingling pains, the areola formed, and milk secreted; the stomach is rendered irritable; vomiting ensues; the appetite becomes variable and capricious, and sometimes the salivary apparatus participates so decidedly in the irritation, that complete salivation takes place; a peculiar product named *kyestein* is occasionally to be found in the urine.

3. The altered condition of the uterus itself, which, increasing in size, ceases to be a pelvic organ, and rises into the abdomen, which, in consequence, becomes enlarged and prominent, and a corresponding change is effected in the state of the umbilicus; while, at the same time, certain alterations take place in the os and cervix uteri, affecting their form, texture, &c., which we can recognize by touch; and a peculiar color may be observable on the mucous membrane of the vagina.

4. The contents of the uterus so enlarged; the presence of a fœtus therein, and its motions, which we endeavor to ascertain by manual examination, both *externally* through the abdominal parietes, and *internally* per vaginam; and also, by the adoption of

auscultation to discover the pulsations of the foetal heart and the placental sound, or uterine souffle.

5. Certain organized substances may, under suspicious circumstances, be discharged from the uterus, by a proper examination, of which, we may be enabled to determine whether they are the product of conception, and, of course, positive proofs of pregnancy.

6. After death, we may be called on to make an investigation for a like purpose, and, by examination of the uterus and its appendages, to determine the question of actual pregnancy, or of previous impregnation. I shall notice the principal of these signs in detail.

Now, it is quite obvious, that of the signs thus enumerated, some are of a kind much more decisive than others, and in this respect, I think we may very conveniently divide them into three classes; considering the first and second groups as *Presumptive*, the third as *Probable*, and the fourth, fifth, and sixth as *Unequivocal*. Many of the sympathies included in the first class are not necessarily the result of pregnancy only, as their specific cause, but may arise equally from the uterine irritation, which is common to that and other conditions of the female system, and hence, one great source of deception and error; while, on the other hand, conception is, occasionally, productive of so little disturbance, or alteration in the exercise of the several functions usually affected, that one of our principal guides in forming an opinion is unavailable. And again, conception sometimes occurs when the system has been already in a state of disease, which, by the derangement previously produced, will prevent the possibility of judging from the absence, or presence of those indications to which we refer in ordinary cases, as happened in the instance of E. G., to be related hereafter,¹ who was laboring under disease of the heart, and had the catamenia suppressed, two whole years, when she conceived.

But whether, under such anomalous conditions as these, or in ordinary cases, where all is proceeding in the regular and natural order, there are some general considerations applicable to all, which should always engage our attention when we seek to assign

¹ See Chap. III. p. 80.

their proper value to symptoms, whether viewed separately, or in conjunction:—

1st. The interval at which they have appeared, after the supposed time of conception.

2d. The order, or succession, in which they have presented themselves.

3d. Their value, as certain and unequivocal, or as uncertain and equivocal.

4th. Their correspondence with each other.

5th. The length of time they may have been in existence.

A. With reference to the period after conception at which it may be expected that a woman will begin to experience any of those constitutional, or other changes which would suggest the idea of pregnancy, it may be stated that, in general, this will not happen until one or two menstrual periods have passed by, without the appearance of that discharge; but there is much diversity in this matter. I shall have occasion, by-and-by, to notice the case of a lady who began to be sick the day after she was married,¹ and her delivery took place exactly nine months afterwards. I have since seen another, who was married on Monday and began to complain on Saturday; she was delivered, eight months after, of a child, evidently wanting a month of maturity. (See also a case p. 90.) In some instances, I have known the first intimation supplied by some uneasy, or painful sensation; a patient of mine has frequently told me, that before she had any other evidence of being pregnant, she became aware of it, from a peculiar burning sensation, which she distinctly referred to the situation of one or other ovary.

B. The order in which symptoms present themselves should always weigh with us; as certain deviations in this respect will often, and at once, show us the doubtful character of the case before us: thus, for instance, we may have suppressed menstruation, morning sickness, mammary development, and an enlarged abdomen, but the order of their occurrence may have been exactly inverted, and no pregnancy exist.

¹ "Alia vero, statim primis a conceptione diebus, adeo a novâ istâ mutatione, ut misere ægrotent, patiuntur." Roederer, Elem. Art. Obst., p. 45, § 142.
"Dès l'instant même de la conception." Desormeaux, Dict. de Méd., tom. x. p. 410.

C. With regard to certain, or unequivocal symptoms, of which there are but three, viz :—

Active movements of the child, unequivocally felt by another;

Its presence in utero ascertained by ballottement;

The pulsations of the foetal heart.

If any one of these be ascertained beyond doubt, it settles the question; but then, we must remember, that they are decisive only on the positive, or affirmative side; if certainly recognized, pregnancy is indisputably proved, but their absence, or rather our not being able to discover them, would be no proof that pregnancy did not exist.

Uncertain, or equivocal symptoms may be used as guides, when they are found associated in considerable number; when manifestly resulting from sexual intercourse; when not resulting from morbid influence; when they appear as an unexpected, new, and unusual event; when they are not fleeting, or transitory, but of a certain duration;¹ and even accidental idiosyncrasies are useful, as corroborative indications, if they have been experienced before, under similar circumstances.

D. The correspondence between symptoms, or the want of it, is often very valuable as a guide; as when, for instance, a woman who has had menstruation suppressed for seven or eight months, with morning sickness and other equivocal indications of pregnancy, is found without the mammary changes and with a flat belly.

E. The length of time during which the existing symptoms have been in existence; as when a woman has had great abdominal enlargement and supposed foetal motions for ten, twelve, or fifteen months.

¹ See Kilian's introductory chapter to the German translation of this work, p. 6.

CHAPTER III.

INDIVIDUAL SIGNS.—SUPPRESSION OF THE MENSES.—NAUSEA AND VOMITING.—SALIVATION.

Suppression of the Menses.—This is one of the symptoms of pregnancy, our investigation of which must, almost always, be encumbered with this difficulty, that our knowledge must be derived from the statement of the female herself; nor can we have, in general, any certain means of disproving, or confirming, her assertion. It is, moreover, a circumstance which, notwithstanding its general subjection to a fixed law, has been fully proved, by experience, to be liable to very many exceptions and deviations.

We are, indeed, quite justified in adopting, as a general rule, that in healthy women, whose menstruation has been established and continued regular, and who are not nursing, conception is followed by a suppression of the menstrual discharge at the next return of its period; but then, this suppression may not so occur, and, on the other hand, it may happen from a variety of other causes, altogether unconnected with pregnancy: for these reasons, we ought, whenever we come to consider this sign, to weigh very fully all the possible circumstances of the individual case before us, and view it in relation to the various exceptions which experience has, from time to time, shown to exist. Thus, we must recollect that cases have occurred, in which conception took place previous to menstruation. Instances of this have happened under my own observation, and a very remarkable one is mentioned by Morgagni in these words: "I was acquainted with a maiden of a noble family who married before menstruation took place, though the menses had been expected for some years; nevertheless she became exceedingly fruitful. We were the less surprised

at this circumstance, because the same thing had happened to her mother."¹

Dr. W. T. Taylor, of Philadelphia, has recently recorded the case of a mulatto girl who was delivered at the age of thirteen years and six months, never having menstruated. His account was written a year after her delivery, up to which time no menstruation had appeared, nor had she had any vicarious discharge; her health was perfect: this girl must have conceived when she was only twelve years and nine months old. Mr. Whitehead, of Manchester, has given the particulars of nine cases in which pregnancy occurred previous to menstruation.² Frank says he had a patient who gave birth to three children, without ever having menstruated, or had lochial discharge; and he saw three others who never had the catamenia, but were not deficient in lochia after delivery.³ A woman, fifty-five years of age, some time since resided in Cornwall, who had borne several children, and always enjoyed good health, but had never menstruated, or had vicarious discharge of any kind.⁴ Capuron quotes several cases of fecundity without menstruation,⁵ and Foderé assures us of the fact.⁶

Sir E. Home relates the case of a young woman who married before she was seventeen, and, never having menstruated, became pregnant, and four months after delivery, was pregnant a second time: the same thing occurred again, and after the third pregnancy, she menstruated for the first time, continued to do so for several periods, and became pregnant again.⁷

In 1851 I was consulted by a lady, whom I had attended in her first confinement, in 1846; she wished me to inform her how

¹ De Causis et Sedibus Morborum, Epist. xlvii. 3. See also Foderé, Méd. Lég., tom. i. p. 395, and tom. ii. p. 437; Desormeaux, Dict. de Méd., tom. x. p. 393; and Mauriceau, Obs. 393, vol. ii. p. 326.

² On Abortion and Sterility, p. 223.

³ De Morb. Hom. Curand., art. *Amenorrhœa*.

⁴ "Ego habui amicam laudabilis temperamenti et complexionis quæ octo filios tulit consequenter, id est omni anno unum; nunquam tamen visa una gutta sanguinis menstrui." Low, p. 523.

⁵ Méd. Lég. relat. à l'Accouchement, &c., pp. 96, 97.

⁶ "J'ai eu occasion de m'assurer complètement de ce fait," tom. i. p. 395.

⁷ Philos. Trans., vol. cvii. p. 258. For several additional references, see Dr. Reid's paper in the Lancet for 1853, vol. ii. p. 206.

long she was pregnant; and on my asking her the date of her last menstruation, she told me that she had never once menstruated since I attended her, five years before. She was now pregnant for the fourth time.

More recently, January, 1854, I saw, in consultation with Dr. McCready, a lady, the period of whose pregnancy had become a matter of anxious doubt, as it was supposed that she had gone two or three months beyond her proper time: she informed me that she had been nine years married, and had borne, and nursed six children, but had never menstruated, even once, during the whole of that period.

It may be here observed, that facts such as these bear out the assertion of Dr. Power, "that menstruation ought not to be regarded as an absolutely necessary action in human generation."¹

Some women are very irregular in the returns of their menstrual periods, having them prolonged much beyond the usual interval. The writer once attended an unmarried woman of forty affected with polypus uteri, who assured him, that the returns of the catamenial discharge, with her, had been frequently deferred for more than six months, without any accompanying circumstance of ill-health. Instances of habitual suppression, for shorter periods, are frequently met with. Zacchias mentions that he attended a patient who used to menstruate regularly, but who never conceived until the discharge had been suppressed for three or four months previously; and facts of exactly a similar kind have occurred under my own observation. A case somewhat similar is related by Mauriceau,² who very justly remarks, that such cases not unfrequently give rise to the supposition of protracted gestation.

At the period which is usually denominated *the change of life*, it is very usual to have the menses suppressed, for two or three months, and then return profusely, giving rise to the idea of pregnancy and abortion, both suppositions being equally unfounded.

On the other hand, cases do occasionally occur, in which women have conceived after menstruation had apparently ceased.³

¹ Essays on the Female Economy, p. 11.

² Observation 556, tom. ii. p. 461.

³ Velpeau, tom. i. p. 182, op. cit.

Dubois saw a woman who became pregnant, two years after her menses had ceased: finding her abdomen enlarging, she went into hospital, and the physician, under whose charge she was, had so little idea of her being pregnant, that he delivered a clinical lecture on the case, as one of ovarian dropsy. M. Dubois discovered the pulsation of the foetal heart, and labor soon afterwards occurred.¹ Dr. Merriman, also, has recorded a case so much in point, that I cannot do better than transcribe his account of it.²

"Mrs. B., upwards of forty years of age, who had not borne a child, for more than nine years, was unwell in March, 1823. As there was no appearance of the catamenia in April, nor the following months, she comforted herself with the hope that the critical change in her life had been happily effected. After some considerable time, however, she began to enlarge in size, and fearing that some disease was forming, she consulted the late Mr. Chevalier, who probably supposed that her complaint was ovarian, and treated it accordingly.

"The enlargement continuing to increase, she was recommended to procure the advice of an accoucheur, and, in consequence, applied to me. On hearing the history of the case, and being positively assured that there had been no appearance of the catamenia, for more than twelve months, there was no reason to suspect pregnancy, and I concluded, therefore, that the enlargement was occasioned by an ovarian tumor. When, however, I had other opportunities of seeing Mrs. B., and was permitted to make an examination, per vaginam, it became evident that pregnancy was considerably advanced, and in nine or ten weeks afterwards (viz., 27th of Sept., 1824), she was delivered of a very stout healthy boy," *i. e.*, eighteen months after the last appearance of the menses.

Dr. Murphy³ relates the case of a woman, aged thirty-one, who had married at fifteen, and borne eight children, without menstruating once, during those sixteen years: the catamenia first appeared when she was thirteen, and continued regular up to the time of her marriage.

¹ Journ. de Méd. et Chirurg., Mai, 1850, p. 207.

² Synopsis of Difficult Parturition, 5th edit., p. xxix.

³ Dublin Med. Journ., vol. xxvi. p. 184.

La Motte records an instance in which conception took place, for the first time, after the menses had been suppressed for seven years, in a woman who had been many years married;¹ and another is mentioned by Professor James, of Philadelphia, in which a woman conceived, after having had the menses suppressed for nearly two years before.²

M. Legros³ tells of a widow, mother of several children, who ceased to menstruate at the age of forty-one. *Two years afterwards*, her general health became deranged; she was thin, sallow, and bore all the appearance of cancerous cachexia, but *she* thought that, perhaps, she was pregnant. M. Legros thought this quite impossible, and treated the case as one of cancer, but *without examination*. In due time, however, the patient brought forth a full-grown child, and explained the circumstance by stating that, thinking herself quite safe *after so long an interval*, she had permitted freedoms which led to such a result.

In married women, and others who have been incurring the risk of pregnancy, suppression may arise from a variety of causes altogether independent of conception; such as different forms of disease, exposure to cold and hardship, mental emotions, particularly that of fear, the effects of which latter, I have had an opportunity of observing in very numerous instances in some of our prisons, where young women constantly apply to the physician in consequence of their menses being suppressed, which they very often, and apparently with great reason, ascribe to the alarm and terror which they suffered, when arrested and carried to prison.

Owing to constitutional peculiarity, menstruation becomes finally suppressed in some women at an unusually early age, and pregnancy is supposed to be the cause. In a case of this kind, in which I was consulted by a married lady, aged thirty-two, her mother suggested to me that perhaps the "time of life" had arrived with her daughter, as she herself had ceased to menstruate at the age of thirty-two; and so it was.

Sometimes, though the instances are of course rare, women

¹ Obs. ix.

² Hosack's Med. and Phil. Register, vol. iv. p. 422.

³ Gazette des Hôpitaux, 1843. For several references to cases of this kind, see Dr. Reid's paper in Lancet, 1853, vol. ii. p. 236.

will conceive when the menses have been long suppressed, in consequence of disease.¹ Several years ago I attended a patient, a married woman named E. G., whose pregnancy was not even suspected, by herself or her friends, till she miscarried of a fœtus of five months. She was laboring under disease of the heart, which had induced dropsy, and had had no menstrual discharge *for two years previous to conception*. Her abdomen had increased in size, but this was attributed to her dropsical state: she had sick stomach, but so she had had for a whole year before, and she was taking medicines likely to nauseate: there was scarcely any change in the breasts.

A woman may conceive while nursing without any previous return of the catamenia, which, however, very often happens in such cases, and I think it will generally be found, that when a woman who has been giving suck, for some months, without menstruating, then has the discharge once, and not again, while soon afterwards there is observed to be a diminution in the quantity of her milk, both suppressions are most probably the result of a fresh conception having taken place. I have very constantly observed it to be so, and Dr. Ingleby mentions a case in which this occurred nine times in succession, so that, between each pregnancy and the succeeding, the discharge appeared only once.² (See cases just related, pp. 76, 77.)

Here, then, we have a variety of cases, in which the absence of the menstrual discharge could not be made a means of diagnosis, or, if assumed as affirmative of pregnancy, might lead us into absolute error.

There is another variety of suppression which, as peculiar in its circumstances, and apparently depending on change of habit, without reference to any morbid, or indeed other appreciable cause, is particularly likely to deceive. I allude to the suppression which not unfrequently occurs in young and newly married females, for two or three periods, while at the same time, as is very usual, the breasts increase in size and become sensitive, and the patient, readily believing such testimony of what she wishes, entertains no doubt whatever as to her state, until, after the lapse of a couple of months, an appearance takes place, which,

¹ Velpeau, tom. i. p. 181.

² See Dublin Med. Journ., vol. vi. p. 329.

although in every respect the same as the patient's ordinary menstruation, and without any of the symptoms of miscarriage, is at once set down as the commencement of that accident, and we are called on to prescribe. Such cases are by no means unfrequent¹ in their occurrence, but they are always liable to great doubt, and extremely embarrassing to the practitioner, who must act with great caution; and give a very guarded opinion. Schmitt's ninth case, first division, is a well marked instance of this state, and in his thirteenth case the suppression continued for nine months after marriage, in a very young woman, during which time the abdomen enlarged, and then pains came on, like those of labor; but nothing was expelled, and the abdomen subsided, as happened also to the physician's daughter mentioned by Harvey.

In a case seen by the writer, the lady, who had been, during her virgin life, subject to dysmenorrhœa, with irregularly prolonged menstrual periods, has, since her marriage, had the discharge suppressed, several times, for two or three periods in succession, with equivocal accompanying symptoms of pregnancy, and uninterrupted good health; these suppressions have each time terminated with an accession of pain like what she used formerly to experience at her menstrual periods, followed by a gush of sanguineous discharge, and the ejection of flakes of membrane, having all the characters of that formed in dysmenorrhœa, but without any trace of the structures of an ovum.

There appears to me great reason to believe, that, in some of these cases, conception really occurs, and gives rise to the alterations observed in the system, but the ovum perishing, no evidence is furnished of its existence, and to such a state as this, the observation of Harvey clearly points when he says: "For although the female sometimes conceiving after coition, doth not produce a fœtus, yet we know that those symptoms did ensue which gave a clear testimony of a conception set on foot, though it came to nothing."²

¹ "I have known," says Denman, "many instances of young married women who have ceased to menstruate for several months, independently of any disease, when they were not with child."—*Introd.*, p. 220. See also Alexander Hamilton on Female Complaints, pp. 122, 123.

² Ent's Translation, ed. 1653, p. 540. Latin 4to. ed. 1766, tom. ii. p. 593. Sydenham Society edit., p. 576.

It now remains to view the matter in another light, and inquire how far the presence of the catamenia can be considered as evidence that the woman is not with child.

The opinion of Denman is that "suppression of the menses is one of the never-failing consequences of conception,"¹ and he ridicules both the asserted exceptions and those who believe them, with a severity which, while it forms a great contrast to his general calm and philosophic style, renders his opinion less free from doubts of its accuracy. The latest supporter of Denman's opinion was Dr. Hamilton, of Edinburgh, who in his last work² throws discredit on all the cases of non-suppression during pregnancy. Schmitt also appears to discountenance the fact, when he says that, "among all the cases of doubtful pregnancy which he had noted, and in which the menses had appeared more or less regularly, there was not one in which pregnancy really existed." But, with the greatest respect for the opinions of these writers, I cannot receive or adopt them, in opposition to my own experience, and to a host of the highest authorities who have written on the subject; with regard to Schmitt, I shall take some of the cases which he has himself so admirably recorded, as proofs opposed to his general position above quoted. In Case 23, Div. 1, he tells us that the woman's ordinary menstrual period was five weeks, and that she had menstruated several times in the beginning of her former pregnancies. And another woman, he says, menstruated for the first seven months of her first pregnancy (Case 31, Div. 1.)

I have met with several instances of menstruation occurring *once* after conception, and am in the habit of attending two ladies, to both of whom it happened; and one of them, who had borne four children, assured me that she always knew when she had become with child by the unusual profuseness of the next period. This is distinctly taken notice of by Johnson, who says "some have the menstrea copiously at the first period."³ A diminution in the quantity under similar circumstances has, however, been more frequently observed. "I have seen," says Desormeaux, "some cases, in which the appearance of the menses in small

¹ Introduction, p. 219.

² Practical Observations on Various Subjects Relating to-Midwifery, p. 83.

³ System of Midwifery, p. 100.

quantity, and at an unusual time, was almost a certain sign of conception."¹ A similar remark is made by Puzos, Stein, and Gardien.² An interesting case, which confirms this, is detailed by Dr. Dewees.³ A gentleman, who had been obliged to absent himself from his family for many months, returned secretly, and spent one night at home with his wife, in consequence of which, she conceived, as the event proved, although the regular return of her catamenia, a week afterwards, in their usual quantity, had led her to expect that she had escaped with impunity.

Again, there are individuals who menstruate with regularity *for more than one period* after conception. This did not escape the keen observation of Hippocrates, who distinctly refers to it in his sixtieth aphorism. "It is well known," says Burton,⁴ "by experience, that the menstrual discharge sometimes continues in its usual regularity for two or three months after conception, without any dangerous consequences." Instances of this are not at all unfrequent, and are quoted by all who have written at large upon this subject,⁵ and one of the most distinguished writers of the present day, says he has "eight well proved cases in which menstruation continued during pregnancy."⁶

Brierre de Boismont states that, of 1200 cases, there were eight in which menstruation appeared during two, three, and four months after conception; and three in which it occurred during the whole period of pregnancy; and one woman menstruated during eight pregnancies.⁷ Mr. Whitehead also notices the same fact, and relates seven cases of the kind;⁸ and we have already

¹ Dict. de Méd., vol. x. p. 394.

² Traité des Accouchemens, vol. i. p. 489.

³ Compendium of Midwifery, p. 165.

⁴ New System of Midwifery, p. 285.

⁵ Capuron, Méd. Légale, p. 63. Belloc, Quest. Méd. Lég., p. 62. Mauriceau, vol. i. pp. 72, 155. Dewees, Compendium, p. 93, *et seq.* Desormeaux, Dict. de Méd., vol. x. p. 394. Gardien, vol. i. p. 489. Gooch, Diseases of Females, pp. 202, 203. Van Swieten, Commentaries, vol. xiii. pp. 379, 458. Beck, Principles of Med. Jurisp., p. 76. Frank, vol. iii. p. 378. Blundell's Principles of Obstetrics, p. 165. Capuron, Traité des Accouchemens, Brussels ed., p. 43. Chambon, Maladies des Femmes, vol. v. p. 57. Rœderer, Elem. Art. Obst., p. 46, cap. vii., § 146, a.

⁶ Velpeau, tom. i. p. 182.

⁷ Brit. and For. Med. Rev., Oct., 1842, p. 386.

⁸ Op. jam. cit., p. 218.

seen, in the deplorable case quoted from Mauriceau, at p. 66, that the error arose from the examiners being deceived by the fact of the woman continuing to menstruate, although four months pregnant.

It has been asserted, as an objection, that these discharges are not truly menstruation; but the discussion of that question does not practically concern us here. We have only to consider whether there does not frequently, during pregnancy, take place a colored discharge from the vagina, so closely resembling menstruation in its appearance, periods, quantity, and duration, that neither the woman herself nor the medical inquirer shall be able to detect any difference between them; and of this, I must declare, with Dewees, Gooch, and Dr. John Power, "there can be no doubt."

Still, I agree with Dr. Hamilton, in believing that many reputed cases of this kind have obtained credence for want of a sufficiently careful examination; by which it would have been discovered that there were such marked differences between the discharges taking place during pregnancy and those to which the woman was naturally subject, in the intervals of their returns, in their duration, and in their quality, as would of themselves suggest the probable existence of some altered state of the system. It is not unreasonable to suppose, with Van Swieten,¹ Frank,² Roederer,³ and others, that such discharges do not proceed from the same source as the ordinary catamenia, "but from the vessels distributed about the vagina and the external surface of the neck of the womb,"⁴ from which situation, even the ordinary monthly discharge has been observed to flow; this view is also maintained by Desormeaux⁵ and Velpeau.⁶

Otherwise, the safety of the ovum would appear incompatible with the profuse and frequently repeated discharges which some women experience during pregnancy, without abortion ensuing;

¹ Commentaries, sect. 1305.

² *Epit. de Morb. Hom. de Metrorrhagiâ.*

³ Roederer, *ut supra*. See also Hoffman, *Ratio Med.*, tom. iv., part 2, cap. 623. Burton, *op. jam. cit.*, p. 285.

⁴ Van Swieten, *Commentaries*, vol. xiii. pp. 379, 469.

⁵ *Dict. de Méd.*, vol. xiv. pp. 184, 185.

⁶ *Traité des Accouchemens*, tom. i. pp. 127, 128.

and, apparently, this has been the source of the discharge in those women who have continued to menstruate after the removal of a great part of the uterus, when inverted; as happened to the lady so successfully operated on in this city, by Dr. C. Johnson.¹ At the same time, I must say that I can see no reason, either anatomical or physiological, why the usual amount of menstrual discharge, if secreted during the early months of pregnancy, should not escape in the ordinary way, through the cervical canal of the uterus, without in any way interfering with the well-being of the ovum.

The subjoined passage from the accurate Roederer illustrates three points of interest connected with this part of our subject; his words are: "*Primis graviditatis mensibus, menstrua plethoricæ et ætate junioris feminæ, cum euphoria fluere possint, atque sic menstruata, gravida esse queat. Iste quidem sanguis ex uteri cervice provenit. Rationem etiam reddit partuum maturorum inter præmaturos relatorum.*"²

In still more rare instances, of which I have never met one, of the accuracy of which I could be altogether satisfied, after strict investigation, but which are recorded by writers of credit, women have continued to have these discharges through the whole period of pregnancy, or nearly so.³ Dewees mentions an instance in which this happened to both mother and daughter,⁴ who were in the habit of menstruating up to the seventh month. "On a vu," says Gardien, "*chez des femmes jeunes et pléthoriques l'évacuation menstruelle continuer pendant les trois ou quatre premiers mois, quelquefois même pendant tout le cours de la grossesse.*"⁵ And, to the same effect, we have the authority of another most accurate and trustworthy writer, Heberden, who says he "knew one who never ceased to have *regular returns of the menstrua during four pregnancies quite to the time of her delivery.*"⁶ Mr. Mayo says: "There are instances in which menstruation takes place exactly

¹ See Dublin Hospital Reports, vol. iii. p. 479.

² Elem., Art. Obstet., p. 46.

³ Foderé, vol. i. p. 437.

⁴ Dewees, Comp. Mid., p. 96.

⁵ Traité des Accouchemens, tom. i. p. 489. See also Blundell's Principles of Obstetrics, p. 165.

⁶ Commentaries on Diseases, p. 208.

in the usual manner during the whole term of pregnancy. I have met with but one case of this description; the patient informed me that it had happened in each of seven pregnancies."¹

Dr. Nicholson, writing from St. John's to Mr. Robertson, of Manchester, says: "A regular monthly discharge during pregnancy, in every respect resembling the catamenia, is not an unfrequent occurrence in this island, particularly with the whites of a sanguine temperament."²

The last, and perhaps most remarkable exceptions to the general rule, to which it appears necessary to allude, are those very singular cases, in which menstruation has either appeared for the first time after conception, or in which it continued only during pregnancy. Perfect's eightieth case³ affords a very satisfactory instance of the former; and Mr. Reid has published the case of a woman of twenty-six years of age who had previously borne children, of whom he mentions, as a curious fact, that, during the nine years that she had been married, she had never seen the catamenia, until she became pregnant with her last child, after which, up to the term of quickening, they appeared regularly every month; but she was always able to judge pretty correctly as to the time of conception by a peculiar sensation of drowsiness attended by sickness, which then immediately affected her.⁴

Daventer, Dewees, and Baudelocque,⁵ furnish us with examples of women whose habit it was to menstruate *only* during pregnancy, and who did so through the whole period of that condition, though never at any other time.

There is a source of deception against which we can hardly guard, and which I knew to have been resorted to by a young woman in one instance. She apprehended that she was pregnant, but deceived those about her by staining her linen at the usual periods of menstruation; this completely lulled the suspicion of

¹ Human Physiology, 3d ed., p. 371.

² Robertson's Essays, &c., p. 92.

³ Cases in Midwifery, vol. ii. p. 71.

⁴ Lond. Med. Gaz., May 2, 1835, p. 146. See several such cases referred to in Velpeau, *Traité des Accouchemens*, tom. i. pp. 117, 118.

⁵ Daventer, *Novum Lumen*, art. Obst., cap. xv. p. 54. Dewees, *Comp. Mid.*, p. 97. Baudelocque, art. d'Accouchement, vol. i. pp. 197, 198, Ed. 1822.

her friends for two months, but in the third, a circumstance was discovered which proved that she had incurred the risk of pregnancy, and I was requested to see her. On looking at the breasts, the areolæ were so distinct, and exhibited their proper characters so perfectly, that I felt persuaded she was pregnant; and perceiving that her breasts were marked with the silvery lines observable on parts formerly much distended, I told her my opinion that she was then with child, and, moreover, that she certainly had been so before. This completely took her by surprise, and she acknowledged that she had given birth to a child about two years previously, and had suffered much from the distension of her breasts during pregnancy. The event also proved that I was correct in supposing her pregnant then, as she was afterwards, in proper time, delivered of a full grown child.

Belloc, p. 65, takes notice of this kind of imposition, which, he informs us, was attempted on himself by a girl three months advanced. "*Il faut alors exiger que les parties soient lavées avec de l'eau tiède; si le sang ne reparait pas, le cas est suspect.*"¹

We should not forget that there are cases occasionally met with, in which suspicions arise in connection with a non-appearance of the menses, the elimination of the discharge being prevented by some adventitious structure, or an imperforate state of some of the natural parts, especially of the hymen. In such a case, the secretion takes place, but being prevented from leaving the body, accumulates within, distending the vagina and the uterus, and so giving rise to several of the sympathies usually accompanying pregnancy. I had an instance of this under my care in a girl of seventeen, who, between the age of fifteen and sixteen, began to exhibit the signs of puberty. When I saw her, suspicions had been excited of her being pregnant. The abdomen was enlarged, and the uterus could be felt as high as the umbilicus; the breasts were painful; she had occasional vomiting, and pain in the back and along the thighs. Complete inability to pass water was the cause of my being requested to see her, and on hearing the above detail of symptoms, I had my suspicions too, but did not express them; on attempting to pass the catheter I encountered a soft elastic tumor protruding from

¹ Capuron, p. 81. Mahon, Méd. Légale, vol. i. p. 153. Foderé, tom. i. p. 438.

the external parts, displacing the urethra, and concealing its orifice. This rendered a closer examination necessary, which detected the hymen attached completely all around, and distended by fluid from within; having relieved the bladder, I punctured the opposing membrane, and gave exit to about three pints of a dark chocolate-colored fluid, without smell and uncoagulated. In December, 1854, a case of this kind was brought to me, the subject of which was a little girl, a child indeed, of *only twelve years of age*; no suspicion of pregnancy of course existed, but the child was suffering much from the distension, and, on puncturing the hymen, about a pint of menstrual fluid flowed away. I have given the particulars of another case elsewhere.¹

Frank² mentions two such cases, in one of which the abdomen was as much enlarged as at the sixth month of pregnancy, and the girl herself thought that she felt a foreign body in the uterus, which, however, was found to contain five pounds of a dark and thick blood, without any offensive odor; in the other case, the girl was believed to be with child, and in consequence suffered temporary loss of reputation, but the hymen was found imperforate, and, when punctured, gave passage to several pints of blood.

Madame Boivin³ has collected the details of ten such cases, among which are two much in point. In one from Denman, the girl was submitted to examination, from a belief that she was with child: the uterus was as high as the navel, and contained no less than four pounds of blood of the color and consistence of tar.⁴ The other case occurred to Dr. Macaulay, in a young woman of nineteen, whom he supposed to be not only pregnant, but in labor, as she had pains, and he felt what he thought was "the membranes with the water pushing low down."⁵ On puncturing the hymen, there came away two quarts of thick black blood. In a case of obstruction related by Dr. Dewees, he mentions that he was fully impressed with the belief that preg-

¹ Dub. Med. Quart. Journ., August, 1853, p. 209.

² Epit. de Morb. Hom. Cur., art. Amenorrhœa.

³ Mémoire sur les Hémorrhagies internes de l'Uterus, p. 73.

⁴ Introduction to Midwifery, p. 87, 5th ed.

⁵ Smellie's Cases in Midwifery, vol. ii. p. 15.

nancy existed, as he could distinctly feel the enlarged uterus, and even thought he felt the motion of a foetus.¹

Such anomalies, having been proved to exist, should always be taken into account, to guard us against error; but it should be acknowledged, as a general rule, to which there will be found but very few exceptions, that when suppression of the menstrual discharge takes place in a healthy woman, previously regular in its returns, who has not sustained any accident, and, continuing for some months, is not attended with any impairment of health, it ought to be regarded as a circumstance strongly indicative of pregnancy; especially if accompanied by other ordinary symptoms of that state; and, on the other hand, considering that menstruation continues in only a very few instances after conception, the regular appearance of that discharge ought certainly to be esteemed a forcible presumption against the existence of pregnancy; even though there should be present other apparent indications of that state, ever remembering, however, that the case in question may be one of the very rare exceptions.

Some have proposed as a diagnostic, in accidental suppression without pregnancy, that, under such circumstances, there are observed marked disturbances in the functions of the system and general health of the woman:² this, no doubt, is often the case; but, I know, from repeated experience, that, in such cases, all the other functions often proceed with the most perfect regularity, and the general health remains unimpaired.

Nausea and Vomiting.—In general, when pregnancy has occurred, the stomach becomes irritable, in consequence of which, the woman is distressed with nausea and vomiting, especially in the early part of the day: in some, this commences almost immediately after conception.³ I had once a lady under my care, in whom there was reason to believe it began the day after conception, and the date of her labor corresponded to such a belief. I attended another patient who was married on Monday, and began to be squeamish on Saturday; her delivery took place within nine months. Very recently, I saw a case which pos-

¹ Essays on several subjects, &c., p. 337.

² See Moreau, *Traité d'Accouchement*, &c., tom. i. p. 501.

³ See Desormeaux, *Dict. de Méd.*, tom. x. pp. 388 and 410. Mauriceau, *Maladies des Femmes grosses*, tom. i. p. 129.

sessed more than one point of interest; showing not only the early period at which nausea was experienced in four successive pregnancies, but the accuracy with which the lady was thereby enabled to predict the time of her confinement. I was engaged to attend a lady in her fourth labor, which she told me she expected would take place on the 12th of November; early on the morning of which day I was sent for, and the lady gave birth to a daughter. On asking how she was enabled to calculate with such accuracy, she told me that she had always reckoned nine months from the first feeling of nausea, and had never been mistaken. She is a woman of acute intelligent mind. Most frequently it occurs for the first time after the first period of menstrual suppression; sometimes not so soon; in one lady's case it never affected her until after quickening, when it generally ceases with others; and in some, it does not happen at all: of this I have now seen several instances.

A writer whose experience and abilities entitle his opinion to great respect, thinks that when vomiting "is entirely absent, utero-gestation does not proceed with its usual regularity and activity."¹ There is little doubt that, in general, vomiting is a useful concomitant in pregnancy, and that its sudden cessation is, very often, indicative of an unfavorable change in the contents of the womb, and of approaching abortion; but I have seen so many instances, in which females have been altogether exempt from this affection in several successive pregnancies, through which they passed most favorably, and gave birth to strong and healthy children, that I must decidedly dissent from the opinion above quoted, as a general rule, although entertaining the highest respect for its author.

On the other hand, irritability of the stomach may occur from a variety of causes totally independent of pregnancy and connected with disease, or disordered function, such as suppressed menstruation; so that we must be slow to draw an inference merely from the presence of such a symptom: at the same time, a proper degree of inquiry will generally enable us to distinguish between the two kinds. The vomiting of pregnancy is not accompanied by any other symptom of ill-health; on the contrary, the

¹ Ramsbotham, *Practical Observations on Midwifery*, part ii. p. 366.

patient feels, perhaps, as well as ever, in other respects, and may even take her meals with as much appetite and relish as at other times, or even with more, but while doing so, or immediately after, she feels suddenly sick, and has hardly time to retire, when she rejects the whole contents of the stomach, and presently feels quite well again: in some instances, however, the woman is distressed by a perpetual nausea, and in a few rare cases, vomiting has been so excessive as to endanger, or even destroy, the life of the woman from inanition,¹ or by rupture of some internal organ.²

By an extension of the sympathetic irritation, which, in the stomach, causes nausea and vomiting, the bowels are, in some cases, affected, and diarrhoea takes place; often about the time of the month at which the woman should menstruate, if not pregnant, and, lasting for two or three days, subsides; while, again, in others, the salivary apparatus is excited to such a degree as to produce complete and copious salivation.³ This fact was expressly noticed by Hippocrates, as one among the symptoms of pregnancy,⁴ and has been observed by many others since.⁵ Dr. Dewees records a well-marked instance of the kind,⁶ and the writer was consulted about another, in which it occurred profusely in two successive pregnancies, but ceased immediately on delivery. This case entailed much undeserved blame on the attendant physician, who was accused of having given the lady so much calomel, as to bring her system under the peculiar influence of mercury; whereas, in fact, she had not taken any; and although she consulted several medical men, the real nature of the case was not guessed at: such a condition is, however, easily distinguished from the ptyalism induced by mercury, by the absence of sponginess and soreness of the gums, and of the peculiar fetor; and by the presence of pregnancy.

¹ See Mem. Lond. Med. Soc., vol. ii. p. 125. Med.-Chir. Trans., vol. iii. p. 139. Ashwell on Parturition, p. 194. Lond. Med. Gaz., vol. v. 1830, p. 287.

² See Duparcque sur les Dechirures de l'Uterus; and London Med. Gaz., Jan. 17, 1829.

³ "Copiosa salivæ excretio."—Raderer, *Elem.*, art. *Obstet.*, p. 45.

⁴ The passage is quoted by Van Swieten, vol. xiii. p. 371, sect. 1293.

⁵ See Gardien, vol. ii. p. 32. Burns, p. 237.

⁶ Compendium of Midwifery, p. 115. See also Schmitt's twenty-second case, second div.; and Capuron, p. 43.

Mr. Gorham has related a case of this kind, in which the patient suffered severely in three successive pregnancies; she is stated to have ejected so much as three and four quarts of saliva per diem: after quickening, the discharge diminished, but did not cease until after delivery, when it immediately disappeared.¹

I am in the habit of seeing a lady, the mother of a large family, who during pregnancy has been so copiously salivated, that her daily supply of pocket-handkerchiefs was three dozen; and at night, it was found necessary to have a folded sheet laid on her pillow, to soak up the saliva which streamed from her mouth, while she slept. She was much debilitated thereby: three of her daughters have been married, and are patients of mine, and one of them has suffered in the same way, but not to the same extent. I subjoin the lady's own remarkably clear account of her case.

"MY DEAR SIR:

"As you have expressed a wish to know any particulars I could give, respecting a very troublesome kind of salivation, which accompanied several of my pregnancies, and those of some of my sisters, and also within the last year was experienced by one of my daughters, I will endeavor to note down whatever I can recollect on the subject. This salivation, or secretion of water flowing constantly into the mouth, was perfectly tasteless, and devoid of any kind of smell; it continued during the first three or four months, at which time I also suffered a good deal from the sickness usually occurring at such periods; but the salivation did not appear necessarily connected with the nausea, as, when at times perfectly free from the one annoyance, the other continued unabated; in fact, except during meal-times and for a short period after taking food into the stomach, I seldom had any respite, night or day, for, even in my sleep, the water often continued to flow from my mouth, although not in the same quantity as when I was awake. I found nothing in the shape of medicine or other treatment materially to check, or even to alleviate this symptom; but I always observed that anything that weakened, or lowered, the system, aggravated it considerably. The attempt to swallow the saliva (unless when enabled to do so by keeping, and dissolving in the mouth, something of a sufficiently strong taste, or flavor, to relieve the insipidity) was quite nauseating, and could not be persevered in for any length of time. The secretion and loss of saliva

¹ Lond. Med. Gaz., June 30, 1848.

was occasionally so great, as to cause a feeling of considerable exhaustion ; but this was always relieved by taking food into the stomach, and I did not perceive that it otherwise affected my general health. I never had the least tendency to soreness or delicacy of the gums, or any part of the mouth or throat. This symptom, which I have thus tried to describe to you, did not accompany all my pregnancies ; I was quite free from it on three or four occasions ; nor could I attribute its occurrence at one time, and not at another, to any cause, or peculiarity, in my state of health. In one instance, when carrying twins, the salivation continued not only the entire period of nine months, but for several weeks after my confinement, and did not cease until my general health, which suffered considerably at the time, had been restored by change of air and a course of bracing remedies. Besides the immediate members of my family already mentioned, I am acquainted with one or two ladies, not in any way related to me, who have been affected in a similar way during the first months of their pregnancy, and who have described the annoyance they suffered from this symptom, as being greater than any one could believe, who had not experienced it in their own person.

" I remain, dear Sir,

" Very truly yours,

" P. C."

In illustration of this fact, it should be remembered that spontaneous salivation has been observed in other forms of exalted sensibility of the uterus, distinct from pregnancy ; thus it sometimes accompanies hysteria, and I have seen it take place in cancer uteri.

It is a curious coincidence that a sister of the lady, whose letter is given above, has suffered in some of her pregnancies, to a most distressing degree, from watery discharges from the nose and eyes.

CHAPTER IV.

MAMMARY SYMPATHIES.—ENLARGEMENT.—SENSIBILITY.—THE
AREOLA.—SECRETION OF MILK.

WHEN conception has taken place, and the menses have been suppressed for one or two periods, the woman generally becomes sensible of an alteration in the state of the breasts, in which she feels an uneasy sensation of throbbing, or of stretching fulness, accompanied by soreness and tingling pains felt about the centre of them, and in the nipple. The breasts themselves grow sensibly larger and more firm; a circle around the nipple becomes altered in color and structure, constituting the areola; and as gestation advances, milk is secreted. But there is considerable variety in the period of gestation, at which these changes may occur, as well as in the degree of their development; for, in some instances, they may be recognized very soon after conception, and proceed with such activity as to cause the woman very considerable pain from the tension of the integuments, which, in consequence, sometimes suffer structural alteration; and, in a few instances, I have known inflammation and abscess ensue; some time since, a lady in the fifth month of pregnancy, told me that she suffered such distress from the swelling and painful state of her breasts, that she was obliged, several times a day, to expose them to the heat of a fire, while she rubbed them with oil, from which proceeding she experienced more relief than from any other; in others, the changes are hardly perceptible until gestation is far advanced, or even drawing to a close. In general, however, we may expect to find these sympathies (except the secretion of milk) becoming developed when two months of pregnancy have been completed; but any opinion, deduced from their existence, must be modified by several considerations. We must recollect that the changes of form and size may be the

result of causes unconnected with conception. In many women, the breasts enlarge merely in consequence of marriage, and the habits thence arising; in others, it may happen from the person becoming fat; it may be caused by accidental suppression of the menses, or their retention by an imperforate hymen,¹ or other causes capable of distending the uterus, under which circumstances, especially in women of a sanguine temperament, the breasts often become both hard and painful.

The enlargement from pregnancy may, however, in general, be distinguished from that produced merely by fat, by the greater firmness of the breast, and the presence of developed veins on its surface, which also feels more knotty and uneven when pressed by the hand, and a corresponding fulness not being found in the other parts of the body.

With some women of an irritable habit, swelling and pain of the breasts accompany each return of the catamenia, especially if they are the subjects of dysmenorrhœa; but under such circumstances, the tension and uneasiness subside on the appearance of the discharge, and, in two or three days, have altogether ceased; whereas, that caused by pregnancy continues to increase, except when the ovum happens to be blighted, in which case the breasts become flaccid, and lose the characters which they had previously assumed. It not unfrequently happens, that, in women of weakly and delicate constitution, very little change can be observed in the breasts till pregnancy is far advanced, or even up to its termination; I, some time since, attended a lady whose health had been delicate during her pregnancy, and no perceptible change took place in the breasts until the fifth day *after delivery*.

Gardien² asserts that the swelling of the breasts is not observable in women who menstruate during the early months of pregnancy; and Mahon³ makes the same observation. I cannot undertake to affirm how far this may be correct, as a general rule, but I have observed that when women have irregular hemorrhages during gestation, especially with placental presentation, the mammary sympathies are in general very feebly exerted,

¹ See cases noticed in the preceding chapter, pp. 82, *et seq.*

² *Traité des Accouchemens*, tom. i. p. 490.

³ *Médecine Légale*, tom. i. p. 151.

thus rendering a doubtful case still more so by such a combination. (See case of M. S., p. 106.)

It should also be recollected, that such a condition of fulness of the breasts may be natural to the individual, or it may take place at the turn of life, when, the menses becoming naturally suppressed, the person grows, at the same time, fatter, and the breasts, under such circumstances, become full, and are not unfrequently painful, a sero-lactescent fluid exudes from the nipples, and, irritability of stomach being at the same time experienced, the woman believes herself pregnant. There is, however, one of those changes which, if carefully observed, is of the utmost value, as an evidence of pregnancy, which, according to my experience, can alone produce it, in its perfect state—I allude to the altered condition of the areola.

The Areola.—The alteration which takes place in that part of the breast which immediately surrounds the nipple, and is called the areola, appears to me not to have received, until within the last few years, that degree of notice which its importance merits, as being one of the most certain external indications of pregnancy, arising from the operation of sympathy. On this, however, as on many other points connected with this investigation, a very marked difference of opinion exists; for while some suppose, with Denman, that the alteration in the areola "may be produced by any cause capable of giving to the breasts a state resembling that which they are in at the time of pregnancy," many others of equal authority maintain the opinion of Smellie and William Hunter, who regarded it as the result of pregnancy only; an opinion in which I entirely concur, and think I shall be able to show that much of the discrepancy of opinion on this subject has arisen from want of sufficient care in observing, and accuracy in describing, the essential characters of the true areola.

Most of those who have noticed this change appear, from their observations on it, to have attended to only one of its characters, namely, its color, which is, in my opinion, the one, of all others, most liable to uncertainty. I should here perhaps except the description by Rœderer, which is by far the most accurate I have met with: "*Menstruorum suppressionem mammarum tumor insequitur; quocirca, mammæ crescunt, replentur, dolent interdum, indurescunt: venæ earum cœruleo colore conspicuæ redduntur,*

crassescit papilla, inflata videtur, color ejusdem fit obscurior, simili colore distinguitur discus ambiens, qui in latitudinem majorem expanditur, parvisque eminentiis, quasi totidem papillulis, tegitur."¹

On this description of Rœderer's, I have to observe that the two distinct groups of changes which it embraces, namely, the general and the special, do not always take place in unison, or with the same degree of perfection and distinctness; so that the former may be well developed and the latter imperfect, and *vice versa*; of which I shall adduce cases, in proof, hereafter. (See pp. 102, 106.)

The several circumstances above enumerated, ought, in all cases, to form distinct subjects of consideration, when we propose to avail ourselves of the condition of this part, as an indication of the existence or absence of pregnancy. One other, also, equally constant, and deserving of particular notice, is a soft and moist state of the integument, which appears a little raised above the surrounding skin, and in a state of turgescence; giving one the idea that, if touched by the point of the finger, it would be found emphysematous; this state appears, however, to be caused by infiltration of the subjacent cellular tissue, which, together with its altered color, gives us the idea of a part in which there is going forward a greater degree of vital action than is in operation around it; and we not unfrequently find that the little glandular follicles, or tubercles, as they are called by Morgagni, are bedewed with a secretion sufficient to damp and color the woman's inner dress. These changes do not take place immediately after conception, but occur, in different persons, after uncertain intervals; we must, therefore, consider, in the first place, the period of pregnancy, at which we may expect to gain any useful information from the condition of the areola. I cannot say positively what may be the very earliest period at which this change can be observed, but I have recognized it at the end of the second month, at which time the alteration in color is by no means the most obvious circumstance; but the puffy turgescence (though as yet slight), not alone of the nipple, but of the whole of the surrounding disk, and the development of the little glandular

¹ Elem. Art. Obstet., pp. 46, 47. The description by Musitanus is tolerably accurate, but not so full: vide his work, p. 64.

follicles, with the developed state of the mammary veins, are the objects to which we should principally direct our attention; the color, at this period, being, in general, little more than a deeper shade of rose or flesh color, slightly tinged occasionally with a yellowish or light brownish hue. During the progress of the next two or three months, the changes in the areola are in general perfected, or nearly so, and then it presents the following characters: a circle around the nipple whose color varies in intensity, according to the particular complexion of the individual, being usually much darker in persons with black hair, dark eyes, and sallow skin, than in those of fair hair, light-colored eyes, and delicate complexion. The area of this circle varies, in diameter, from an inch to an inch and a half, and increases in most persons as pregnancy advances, as does also the depth of color. I have seen the areola, at the time of labor, almost black, and upwards of three inches in diameter, in a young woman of very dark hair and complexion; while in another instance, in a lady who had borne several children, its breadth around the base of the nipple did not, at any time of gestation, amount to a quarter of an inch, and at first was not more than an eighth; this circle, however, narrow as it was, was studded, at nearly regular intervals, with the glandular tubercles, which were not unlike a ring of beads.¹ In negro women, the areola becomes jet black, with somewhat of a purple shade through it.² In the albino, it is of a delicate rose color.

In the centre of the colored circle, the nipple is observed, partaking of the altered color of the part, and appearing turgid and prominent,³ its apex being, more or less, covered with little branny scales, produced by the drying of a sero-lactescent fluid which oozes from the part, and a drop or two of which may, in general, be pressed out by the fingers; while the surface of the areola, especially that part of it which lies more immediately around the base of the nipple, is studded over and rendered

¹ A similar case occurred to Dr. Hamilton; see his *Practical Observations*, p. 88, 2d edit.

² In some of the monkeys, the change in the nipple and part around it is very remarkable, towards the latter period of gestation, when it becomes turgid, and of a bright vermilion color.

³ "*Crassescit papilla, inflata videtur.*"—*Ræderer*.

unequal by the prominence of the glandular follicles, which, varying in number from twelve to twenty, project from the sixteenth to the eighth of an inch;¹ and, lastly, the integument covering the part appears a little raised, turgescient, softer, and more moist than that which surrounds it, while on both, there are to be observed at this period, especially in women of dark hair and eyes, numerous round spots, or small mottled patches of a whitish color, scattered over the outer part of the areola, and for about an inch or more all round, presenting an appearance as if the color had been discharged, by a shower of drops falling on the part. Dubois, referring to this appearance, as described by me, and often noticed by himself, applies to it the designation of secondary areola. I have not seen this appearance earlier than the fifth month, but towards the end of pregnancy it is very remarkable, and constitutes a strikingly distinctive character, *exclusively resulting from pregnancy*: the breasts themselves are, at the same time, generally full and firm, at least more so than was natural to the person previously, though to this I shall have occasion to notice exceptions; and venous trunks, of considerable size, are per-

¹ These follicles, or tubercles of the areola, although by many considered merely as sebaceous glands, have really a much more important character, and more intimate connection with the peculiar structure and function of the breasts, than is generally supposed; and hence, might naturally be expected to display an active sympathy in any condition of the system which called into action the peculiar function of these organs, which is the secretion of milk for the support of the new being, for which purpose, certain previous changes in the glands and ducts are necessary. Now it is quite certain that these areolar tubercles are intimately connected with the lactiferous tubes, some of which can be traced into them, and seen opening on their summit,* so that, in pregnant women, a sero-lactescent fluid may be often distinctly perceived issuing from them; and in nurses, they have been observed to pour forth drops of perfect milk. They are, in fact, a constellation of miniature nipples scattered over a milky way. "I have seen," says Morgagni,† "lactiferous tubes going to each of these tubercles, and expanding within them, so that their formation was in a great degree caused by the dilatation of these ducts, and their prominence beyond the surface of the areola." In addition to this, it appears from the more recent investigations of Meckel‡ and others, that each of these follicles is, in common with the nipple and surrounding areola, furnished with very small sebaceous glands, which lie around its base, the ducts of which, from one to four in number, are found opening on the surface of the tubercle.

* See Morgagni, *Adversar.*, i. pp. 10, 11, plate 4, fig. 2.

† *Adversar.*, v. p. 10.

‡ *Manuel d'Anatomie*, tom. iii. p. 652.

ceived ramifying over their surface, and sending branches towards the disk of the areola, which several of them traverse: along with these vessels, the breasts not unfrequently exhibit, about the fifth or sixth month, and afterwards, a number of shining, whitish, almost silvery lines, like cracks; these are most perceptible in women who, having had before conception very little mammary development, have the breasts much, and quickly enlarged after becoming pregnant:¹ this appearance will be more particularly dwelt on, when we come to consider it under the signs of delivery, but, for the present, it should be remarked that, when once formed, these lines continue permanent, and, consequently, will not serve as diagnostic marks of a subsequent pregnancy, and that, in many instances, they do not form at all.

Such, then, are the essential characters generally belonging to, or connected with, the true areola, the result of pregnancy; and when found possessing these, it ought to be regarded as a very strong proof of the existence of that condition, no other cause being capable of producing it; while it affords us facilities in forming an opinion not otherwise available, first, in being appreciable at those early periods of gestation which are involved in most doubt, and, secondly, that opportunity will be given of examining it, when other modes of investigation would be denied us, or when, perhaps, the bare mention of a suspicion could not be ventured on.

But we cannot stop here, and rest satisfied with the knowledge of the distinctly affirmative, or positive, side of the question only without also looking to certain circumstances which will most materially modify the certainty of our conclusions.

In the first place, then, pregnancy may exist and the areola not be developed, until a much later period than usual; of this I have seen several examples, and Dr. Merriman tells us that he "once watched, with great care, a case of first pregnancy, in which the areola was not developed till the commencement of the seventh month. I believe," says he, "this is a solitary instance within my practice:"² or, it may remain deficient in at least one of its essential characters, and that the one too gene-

¹ See case already mentioned, p. 86.

² Synopsis, 5th edit., p. xviii.

rally supposed to be its most important distinctive mark, namely, the color. The writer has seen several well-marked instances of this, two of which he formerly noticed, one in a lady of very fair skin, blue eyes, and light hair; the other in a lady of fair skin, but with black hair and very dark-brown eyes: in both, the color of the areola was so slight, as hardly to differ from that of the surrounding skin, and certainly was less distinct than I have frequently seen it in the virgin; but all the other characteristic changes enumerated were well developed in both.

It has already been remarked, that in some, the mammary sympathies are almost entirely wanting, or at most very feebly exerted, even though gestation should be proceeding healthily; and it should be added, that, even where there is no such deficiency in the mammary changes and areola, should the foetus be blighted, the characters of the areola will soon decline and fade away, in common with the other changes previously effected in the breasts, which, under such circumstances, become soft and flaccid, lose their sensibility, and cease to exhibit the enlarged condition of the veins; the areolar tubercles, also, shrink, and are no longer bedewed with their sero-lactescent moisture.

Now as to the color alone, we may adopt this belief, that where we find a circular disk of a dark brownish shade around the nipple, especially in a woman of light hair and fair complexion, even though it should be unaccompanied with the other changes natural to the part, it affords very strong presumptive evidence of a present, or former state of pregnancy; but when so accompanied, it is a mark of great value, and in my experience has never yet deceived me: and I certainly never saw any other condition of the part, produced by disease, which could possibly be mistaken for it. At the same time, it should be observed that the areola does not always, in pregnant women, present all the characters I have described as belonging to it, nor does the perfection of its distinctive characters seem to depend so much on the degree of change and increase of vital activity in the breasts, as on some constitutional peculiarity; for I have repeatedly observed the ordinary, or general mammary changes take place with great energy, so that the breasts themselves were greatly altered, and yet the areola exhibit little or no change; and, *vice versa*, the areolar signs are sometimes very distinct and perfect

when the breasts are otherwise but slightly affected (see case of M. S., to be related presently): and I have not unfrequently found both the general and special mammary changes much more remarkable in one breast than in the other. I have seen it at the time of labor presenting the dark circle alone, without the prominence of the glandular follicles; but I never saw an instance of their development, in conjunction with the other changes already described, without the concurrence of pregnancy: their absence, therefore, ought not to decide our opinion against the existence of that condition, though their presence would be, with us, a very convincing proof of previous conception: we should also be cautious in being influenced by the condition of this part, before the period stated as that at which its characters are in general developed and perfected.

It has been already stated (p. 95), with reference to some of the *general* changes in the breast, that they are not unfrequently observed to accompany the catamenial returns, in patients of an irritable habit; and I have now to add that certain of the *special* signs may, under similar circumstances, be observed; thus we have, occasionally, in dysmenorrhœa, a visible increase of vital action in the areola; its color is deepened, it is slightly turgescient, and the follicles a little developed; but all these changes are only in a slight degree, and more or less completely disappear after two or three days, when the menstrual nîsus is over, and there are wanting the swollen veins meandering over the surface of the breast and running into the colored disk, which, moreover, has not the emphysematous feel, or moist appearance, observed in pregnancy; and in no one instance did I ever see the branny scales on the apex of the nipple or around the colored disk, the ring of whitish spots, or secondary areola, which encircles the true areola resulting from pregnancy.

Again, we must recollect that a woman may be presented to us for an opinion, who, having perhaps very recently miscarried, her breasts may exhibit all the true characters of the areola, combined with several other circumstances really indicating a state of pregnancy; but if we do not use great caution in giving our opinion, it will, in such a case, appear falsified by the event, although really correct. In nurses, also, the characters of the

areola are kept up, and continue in a state of considerable perfection.

A case which occurred while I was lecturing on this subject, several years ago, afforded a very satisfactory illustration of the value to be attached to this evidence of pregnancy. A young woman came a considerable distance, from the country, to be admitted into Sir P. Dun's Hospital; the medical men in the country not having succeeded in affording her relief or restoring her health. A very prominent symptom of complaint, was amenorrhœa, of four months' duration, accompanied by uterine pain, want of appetite, &c. A very intelligent pupil suggested to me, after lecture, that he thought I must be mistaken in my account of this subject, as there was then in the house an unmarried patient, laboring only under amenorrhœa, whose breasts presented the areola, with all the characters I had described. I immediately visited her, and, on examining her breasts, declared at once that there was the true areola of pregnancy; an announcement which she heard with the most fiery indignation, declaring that she would submit to anything rather than lie under so calumnious an imputation, and even consenting to permit an examination per vaginam, when proposed to her, as the only thing which could save her character. On making the examination, I was able to feel the foetus distinctly by *ballottement*. She afterwards acknowledged that she had been "walking by moonlight, with a young man who had a great regard for her."

The color of the areola depends on the deposition of an actual pigment between the cuticle and subjacent skin. Of this, I have satisfied myself by making preparations of the part, one of which, showing this very distinctly, is preserved in my museum. Dubois says he saw an instance, in which the cuticle peeled off the disk of the areola, carrying with it the pigment in scales.

In some persons, of fair complexion especially, this coloring matter is removed in some time after delivery, and the breast resumes its virgin appearance; in others, especially in brunettes, the color remains permanent, and there is even a slight prominence of the little glands to be observed, sufficient to deceive an inexperienced eye, so that if a woman has been pregnant before, and particularly if she has suckled, or is nursing, it may embarrass our investigation: but, except pregnancy be present, the

disk of the areola is flat, and its color imperfect, whereas when a subsequent pregnancy takes place, the color deepens and the raised emphysematous appearance returns.

It is also to be recollected, that it is peculiar to some young females to have the areola assume a shade of color resembling that which we so frequently observe around, or under the eyes, and in women of a swarthy hue, it is sometimes found in the virgin state, of even a darker shade than that just alluded to; in such persons, during pregnancy, it becomes of an intensely dark, almost black, color.

This deposition of a coloring matter is often to be observed in other situations, also, during pregnancy, as around the eyes, on the forehead, or side of the face, in the brown line running along the middle of the abdomen, and in the areola sometimes formed around the umbilicus: of all these appearances we shall have occasion to speak more fully hereafter, and, for the present, I shall only remark, that the shade, or depth of color, is by no means always the same in these different situations, in the same individual; as I have seen the areola very deeply colored when the abdominal line was very faint, and the latter well marked, where the areola had scarcely any color at all.

The conclusion which Gooch came to, on this subject, was, that "darkness of the areola rarely depends on other causes (than pregnancy), and that, when it exists, it may, generally, be looked upon as a sign, either that the patient is pregnant, or has been so formerly."¹ It seems remarkable, that so accurate a writer as Gooch should have confined his description to the color alone. Smellie's account is more accurate, and he considers it as the result of pregnancy only.² William Hunter has not, as far as I am aware, left us any description of what he considered the true areola, but he professed such faith in this sign as to assert that he could always judge, by it, whether a woman was pregnant or not; and on one occasion, gave a remarkable proof of his accuracy. Happening to examine the breast of a subject brought to him for dissection, he immediately pronounced, from the appearance of the areola, that the woman had died pregnant; however,

¹ Account of Female Diseases, p. 205.

² Treatise on Midwifery, vol. i. p. 191.

on examining the genitals, the hymen was found entire; but Hunter persisted in his opinion, declaring that the areola was more convincing than the presence of the hymen. The body was opened, and an impregnated uterus confirmed the justice of his assertion.

Dr. Campbell¹ appears to lay most stress on the color, which he thinks may deceive in subsequent pregnancies, but altogether, he considers the appearances presented by the areola, especially in a first pregnancy, as a more unequivocal sign than most others, and as much so as any, "not excepting foetal movement itself." Dr. Blundell² also regards the areolar changes, when fully developed and clearly recognized, as "deserving of a very confident reliance," and relates several cases, in which he detected pregnancy by their means. The late Dr. Hamilton, of Edinburgh, whose acute observation and extended experience necessarily give great weight and value to his opinion, comes to a conclusion decidedly confirmatory of the view I had previously taken of the subject. He justly attaches great consequence to the appearance of turgescence of the integument, which he considers as the principal distinctive mark between the part during pregnancy, and at other times, in women who have had a family, and in whom the areolar disk retains its dark color.³ He says that, "when suppression of the catamenia is followed by the change in the mammae to be now described (*i. e.*, the areola), there can be no doubt on the nature of the case:" his "decided conviction," he says, "is that the areola connected with pregnancy can always be distinguished by an experienced eye," and that it is "the chief cognizable sign of pregnancy during the early months."³ Darkening of the areola and an increased secretion of saliva, are recognized among the Hindoos as signs of pregnancy.⁴

The late Dr. Merriman, whose judgment in practical matters connected with obstetric medicine is as universally acknowledged as he was himself esteemed and respected, says on this particular subject: "I am disposed to consider the formation of an areola

¹ *Introd. to Study and Practice of Midwifery*, pp. 488, and 493.

² *Principles and Practice of Obstetrics*, pp. 162, 163.

³ *Pract. Obs. in Midwifery*, p. 85, *et seq.*, 2d edit.

⁴ See Wise's *Hindu System of Medicine*, *Dublin Medical Journal*, Aug., 1847, p. 202.

round the nipple, connected with the suppression of the menses, as the most conclusive evidence we can possess, in the early part of a first pregnancy. But after a woman has borne children, the evidence of the areola is not so perfect."¹ Professor Bedford, of New York University, in his recently published work on the diseases of women, says, he places great reliance on the presence of the areola as a strong evidence of pregnancy. "The true areola," he says, "in my judgment, and this opinion is founded on careful and extensive observation, is not recognized except as a consequence of gestation."² I have, elsewhere, related the particulars of a melancholy case, in which the detection of the areolar changes, though at an early period, and in conjunction with circumstances which placed the occurrence of impregnation almost beyond the limits of belief, induced me to suspect, and suggest the existence of pregnancy, which unfortunately the event proved to have taken place:³ and another case which greatly confirmed my reliance on this sign, because occurring in a woman who had previously borne several children, was also highly interesting as another instance of pregnancy existing under circumstances which apparently forbade the idea of such a state. It was as follows:—

In December, 1831, I was requested to see a patient, M. S., affected with menorrhagia, arising, as was supposed by her medical attendant, from disease of the uterus: she was nearly forty years of age, and had borne five children; in the preceding May, she had miscarried, in the fifth month, and the placenta was retained eight weeks, and then came away piecemeal. In July, she returned to her husband's bed, but her health continued feeble, and she had, at irregular intervals, of one, two, or three weeks, profuse and foul uterine discharges, but had none of the usual symptoms which used to accompany her pregnancy in former instances, so that she utterly disbelieved in the possibility of being then with child. For two months previous to my seeing her, her fears had been much augmented by the presence of a tumor, in the centre and lower part of the abdomen, which was almost constantly the seat of severe pain; and she had still

¹ Synopsis, &c., 5th edit., p. xviii.

² Pp. 49, 259.

³ See Dublin Medical Journal, vol. vi. p. 418.

the foul uterine discharges. Under such circumstances, I entertained little idea of the existence of pregnancy, but on seeing her breasts, which were small, wrinkled, flabby, and in every respect unlike those of a pregnant woman, I was rejoiced to find them exhibiting a very perfect example of the true areola, with all its characters so well marked, that I did not hesitate to declare my belief that she was pregnant, though every other circumstance conspired to render it more than improbable. The uterine tumor felt as *hard as cartilage, and knotty all over its surface, was very painful, and exquisitely tender to the touch*; but the condition of pregnancy was put beyond a doubt, in less than a week afterwards, by her expelling a foetus of five months, and along with it, its placenta quite perfect, and afterwards, several fragments of a substance resembling decidua, mixed up with what appeared to be portions of placenta and membrane, but altered in their texture and consistence, so as to possess the toughness of leather; these substances were, in every respect, totally different from any of the parts of undoubtedly recent formation; the expulsion of them went on for fully half an hour after the rest of the process was completed; and portions continued to be discharged, at intervals, for some days; after which, the patient recovered well: at the end of a month, there was not a trace of uterine irritation, or discharge, and she considered herself in better health than she had been for a year before.

The above case presents a striking illustration of a remark already made, p. 97, upon the want of harmony occasionally observable between the general and special, or areolar changes in the breast, as indicative of pregnancy: for here, the latter were very well marked, while the former could not be said to exist at all; and I believe this peculiarity will be most frequently observed in those cases where there is some unhealthy, or abnormal condition of the uterine contents, as in this case, and in another, where the uterus contained a large quantity of hydatids: but it is not confined to such cases only, as I have seen it, also, where the child has been afterwards born alive and well.

Another question of great interest and practical importance suggests itself here; could the extraneous matters, expelled in the case of M. S., have remained in the womb from the time of the former miscarriage? The affirmative, I believe to be abundantly

established by facts. A case occurred some years ago in Roscommon, in which parts of the skeleton of a former conception came away at the time of the next labor, and Harvey relates an instance of a similar kind. "We have sometimes observed," says he, "both in women and other animals, the product of conception perish, and come away gradually in the form of a thin fluid, somewhat resembling fluor albus. Not long since, a woman in London, after an abortion of this kind, conceived anew, and brought forth a child at the proper period. Subsequently, however, after a lapse of some months, as she was engaged in her ordinary duties, without any pain, or uneasiness, there came away piecemeal, some dark bones, belonging to the foetus of which she formerly miscarried. I was able to recognize in some of the fragments, portions of the spine, femur, and other bones." I shall have occasion, when discussing the signs of delivery, to relate a case in which, at the termination of pregnancy, there was found in the uterus nothing but a large quantity of foetid gas, sanious fluid, and the bones of the child; which continued to be discharged, from time to time, during the rest of the patient's life, which lasted two years and a half.²

Such occurrences as the above suggest a consideration of great importance, namely, that a woman may expel parts of a foetus, or portions of an ovum, without reproach, under circumstances which would, at first sight, imply a departure from virtue; thus, for instance, it might have been with M. S., or with the woman spoken of by Harvey, had they been separated from their husbands after the first miscarriage.

Milk in the Breasts.—The secretion of milk in the breasts is popularly esteemed as an infallible proof of pregnancy; but nothing can be more erroneous than such a presumption, if adopted without modification; since it is contradicted by facts, recorded on the best authority, proving the possibility of the formation of milk, under circumstances totally independent, not only of pregnancy, but even of intercourse, at ages antecedent to puberty, and after the cessation of the generative faculty.

Perhaps the most remarkable case on record is that of the

¹ Dr. Willis's Translation, Syden. Sec., p. 528.

² See First Edition of this work, p. 301.

little girl of Alençon, who was produced by Baudelocque¹ before the Royal Academy of Surgery, on the 16th October, 1783, where she milked her breasts in presence of the members. This girl was only eight years old, and the secretion was caused by the repeated application of an infant, which her mother was suckling at the time.

I have at present a young lady under my care about whom I was consulted more than a year ago, in consequence of the constant presence in her breasts of a distinctly milky fluid; she is now twenty years of age, and has had this milky secretion since she was sixteen, when menstruation became established; she married the year before last, and has not, as yet, proved pregnant; the state of the breasts is the same as before marriage. This young lady menstruates regularly.

I am in the habit of prescribing for another lady who, six months after marriage, had her breasts enlarged, the areola rather marked, nipples prominent, and giving out, on pressure, a yellowish white fluid, which, under the microscope, showed abundance of milk globules. She had the abdomen enlarged, with sensations of motion, and much morning sickness of stomach. The catamenia are regular as to time, though very deficient in quantity. She is not pregnant.

Belloc² mentions a servant girl, who, being obliged to have sleeping in her chamber an infant which was being weaned, and which, by its crying, disturbed her rest, bethought her of giving it her breast to appease its clamor; and the result was, that in a short time, she had milk enough to satisfy the child. Dr. Fingerhuth, of Esch, in his treatise on hypertrophy of the mammary gland, mentions, as one of the means of cure to which he resorted with success, the establishment of the lacteal secretion by artificial means, under circumstances totally unconnected with pregnancy; and he gives the details of cases, in which this was accomplished with benefit to the disease.³

The same phenomenon has occasionally occurred in women advanced in years. The following case is related by Mr. George

¹ Art. d'Accouchement, tom. i. p. 188, ed. 1822.

² Cours de Méd. Légale, p. 52. See also Foderé, Traité de Méd. Lég., vol. i. p. 440.

³ Zeitschrift für die Gesamnte Medicin, Oct., 1836.

Semple.¹ "Mrs. B., the wife of John Breward, Simpson Green, near Idle, aged forty-nine, the mother of nine children, the youngest of whom is twelve years old, lost a daughter-in-law about a year ago, who died in about a fortnight after giving birth to her first child. On her death, Mrs. B. took charge of the infant, a little, puny, sickly baby. The child was so fretful and uneasy, that Mrs. B., after several sleepless nights, was induced to permit the child to take her nipple into its mouth. In the course of from thirty to thirty-six hours, she felt very unwell, her breasts became extremely painful, considerably increased in size, and soon after, to her utter astonishment, milk was secreted and poured forth in the same abundance as on former occasions, after the birth of her own children. The child, now a year old, is a fine, thriving, healthy girl, and, only a few days ago, I saw her eagerly engaged in obtaining an apparently abundant supply of healthy nourishment, from the same fountain, which, nearly twenty years ago, poured forth its resources for the support of her father." Several other instances still more remarkable are on record.² In the *Med.-Chir. Review*, vol. xvii. p. 201, there is a collection of several cases of preternatural lactation, by Dr. Kennedy, of Ashby-de-la-Zouch, to which he has himself added one, of a woman, who, for forty-seven years after the birth of her first child, continued to give suck uninterruptedly, nursing six children of her own and eight others; *she menstruated regularly* during lactation, and up to her eighty-first year, it is stated, had still a moderate secretion of milk: the details of this case are particularly well worth perusal. Mary Gibaud, whose case will be related in Chap. XI. sect. 2, had milk in her breasts for twenty years, but never was pregnant.

The secretion of milk in the breasts of men, under a like stimulus, has been testified on authority³ free from doubt or sus-

¹ North of England Med. and Surg. Journ., vol. i. p. 230.

² See Smith, Forensic Medicine, p. 484. Philos. Trans., vol. ix. p. 100, and vol. xxxi. and xli. Capuron, p. 126. Beck's Medical Jurisprudence, 5th ed., p. 121, note. Coxe's Medical Museum, vol. i. p. 267.

³ See case by the Bishop of Cork, Philos. Trans., vol. xli. p. 813; another by Humboldt in his Personal Narrative; and a still more recent one by Captain Franklin, in his Journey to the Polar Sea, of a young Chippewyan, whose wife died in labor. "Our informant," he adds, "had often seen this Indian in his old age, and his left breast, even then, retained the unusual size it had acquired in his occupation of nurse."

picion, and is here only referred to as an argument, *à fortiori*, in favor of its formation in women, under circumstances distinct from pregnancy.

Having been informed that there was, near Castle Bellingham, a man who habitually secreted milk, in order to ascertain the truth, or falsehood of the report, I applied to a trustworthy and educated gentleman, who was said to know all the circumstances of the case; his reply is subjoined:—

“William Spence, the person who was subject to these discharges, was a Scotchman, aged about forty years, and lived with my father, as land steward. He was a married man, the father of several children by his wife, and of several illegitimate children. The attacks, as I may call them, used, as well as I remember, to occur about once in six weeks. He used to suffer from very great pain in his breasts, which, at times, became much inflamed, and looked more like a woman's than a man's breasts. After some time, there would be a copious discharge of milk from the breasts, after which, the inflammation would subside, and all pain cease. During the attacks, he used to be confined to his room. I saw him during one, and observed him particularly; the breasts were as I have described, and on his pressing them, there was a large flow of milk; he complained of being in great suffering. He was a short, thick-necked, strongly-built man, coarse featured, and of very strong passions.”

The following case by Dr. Schmetzer, of Heilbronne, is given in Schmidt's *Jahrbucher* for July, 1837, and is of more than ordinary interest, as an illustration of the matter before us.

“This case occurred in a robust sanguine soldier, of twenty-two years, whose genitals were well formed, but whose voice and beard were not yet well developed, and who had been, for two years, addicted to sexual indulgences.

“When eighteen, he often felt a pricking sensation in his breasts, and slight periodical colic. About a year later, he observed, after each occurrence of such symptoms, a slight swelling of, and milky discharge from the mammæ; and during work, his shirt was, several times a week, wetted with it. When in the hospital, for acute rheumatism, a considerable quantity of milk was found to be secreted.

“On examining the breasts and nipples, the latter were found

highly red, erectile, somewhat cracked at their apices, and much higher than in men generally, and surrounded by a somewhat darker areola, through which a subjacent vascular network could be seen.

"On pressing the papilla, two or three fine streams of milk would jet out of minute orifices; it had a bluish-white color, and a very sweet taste. The secretion was constant, but increased at varied periods, especially at night, producing a somewhat painful sensation, till it was evacuated; the usual quantity was from half an ounce to an ounce, daily, but sometimes not more than two or three drachms.

"On one occasion, a wineglassful was drawn off, and in the fortnight that he was under observation, from ten to eleven ounces were secreted. After the evacuation of it, he said he always had headache, faintness, and sometimes pains in the abdomen. Diet had no material influence on the secretion. Collected in a glass, and left quiet, cream soon appeared, and sometimes the milk at once coagulated. After some hours' standing, the butter separated, and floated at the top in yellow drops. The milk had a slightly alkaline reaction. Its specific gravity was 1.024; and it contained, according to the analysis of Mayer, in 100 parts:—

"Fat	1.234
Alcoholic extract	3.583
Watery	1.500
Insoluble	1.183

Total solid contents 7.500"¹

On this topic, I shall only add that I have in my museum the breast of a man who had mammæ like a young woman; bristles are passed through ducts in the nipple into the substance of the mammary gland; the genital organs were well formed. He was forty-five years of age, had never married, and died of phthisis.

Every one is familiar with the fact that the breasts of infants, a few days old, are often swollen with a fluid having the sensible properties of milk. The researches of Natalis, Guilliot, and others, have proved the secretion of this fluid, under these circumstances, to be a normal action; and at a meeting of the

¹ Quoted in Lond. Med. Gaz., Sept. 2, 1837, p. 846.

Physiological Society of Edinburgh, Dr. Cobbold demonstrated, under the microscope, a specimen of milk from the mammæ of a male child, nine days after birth; the milk presented the usual microscopical characters; but the globules were larger, and less numerous than usual; there were no compound granular cells.¹

John Hunter has shown that it is natural to the males of the dove and pigeon tribe to have, during the period of incubation, a change effected in the internal surface of the crop, from which a nutritive fluid is secreted, with which they assist in feeding the young birds.²

A source of deception will occasionally present itself in women, who, after nursing, retain milk in their breasts for an unusual length of time. A patient of mine, after weaning her last child, which she nursed for fifteen months, retained, for nearly three years,³ so much milk in her breasts, that she was obliged to adopt precautions to save her dress from being wet by it, and for two years afterwards, she could still express a little milk from the nipples. The mother has not since conceived, but has always menstruated with the greatest regularity, as I have seen happen in several other instances, contrary to the rule laid down by Hippocrates, that if a woman, who is neither pregnant, nor recently delivered, has milk in her breasts, her menses are absent. (See two cases, p 109.)

Dubois mentions the case of a Swedish lady, who secreted milk for several years after nursing, and did not menstruate during the time; but, at length, one slight menstruation occurred, and she forthwith conceived; she nursed her second child, and the same thing happened again.⁴

Dr. Francis, in his edition of Denman,⁵ mentions, on the authority of Professor Port, that a lady was, almost fourteen years ago, delivered of a healthy child; since that time, her breasts have regularly secreted milk in great abundance, so that, to use her own language, she could, at all times, easily perform the office of a nurse. She has uniformly enjoyed good health, is

¹ Edinb. Monthly Journ., Feb., 1854, p. 165, and Sept., 1854, p. 171.

² Observations on the Animal Economy, p. 235.

³ Dr. Blundell mentions a similar case, *op. jam. cit.*, p. 160.

⁴ *Gaz. des Hôpitaux*, Mars 16, 1841.

⁵ Francis's Denman, p. 229.

now about thirty-five years of age, and has never proved pregnant a second time, nor had any return of her menses.

Dr. Merriman tells us that "a woman became pregnant at nineteen years of age; she was not pregnant again for nearly twenty years; yet during this time, she could always produce milk by gently squeezing the breasts; the milk was in small quantity, it is true, but it was pure milk."¹

Dr. Blundell says, that in the Ethiopian variety of mankind, the breasts are very active; and his friend, Dr. Chapman, gave him the case of a negress of Demerara, who, after her pregnancy, formed milk for twenty years together.²

"We see," says Foderé, "women who have milk in their breasts from one pregnancy to another, and even for whole years together, although they have not nursed." And he adds that he has had repeated opportunities of observing *the secretion of milk take place on the cessation of the catamenia at the turn of life*, of which fact he quotes two striking instances;³ an occurrence which we shall have frequent occasion to notice, as connected with a train of very peculiar symptoms originating in disturbance of the uterine functions, and affecting the system in a remarkable manner; as will be fully noticed when we come to consider the subject of spurious pregnancy.

It has been already remarked, that morbid causes capable of distending the cavity of the uterus may excite sympathetic changes in the breasts, and it appears that even the secretion of milk may be thus induced; as happened in two cases mentioned by Frank, where it occurred, in one, in consequence of physometra,⁴ and in the other from hydrometra.⁵

I was, very recently, consulted by a lady of a highly nervous temperament, who had been for several months laboring under uterine irritation, connected with inflammation and ulceration, during all which time she had menstruated regularly; but as she was getting large in the abdomen, and had begun to have milk in her breasts, she thought herself pregnant, to determine which

¹ Synopsis, &c., 5th edit., p. xix.

² Principles of Obstetricy, p. 160. By far the most remarkable case of this kind is Dr. Kennedy's, already referred to.

³ Médecine Légale, tom. i. pp. 440, 441, and note.

⁴ Vol. iv. p. 50. French translation.

⁵ P. 182, *ibid.* See also Schmitt, 2d case, 1st div.

she sought my opinion; she was not pregnant. Moreover we learn from facts, some of which have been already noticed, that excitement of the sexual system, without conception, is occasionally followed by some of the sympathetic actions, or changes which would naturally accompany, or follow pregnancy, as when suppression of the menses takes place soon after marriage, and is followed by morning sickness and fulness of the breasts (see cases already referred to, p. 81). And amongst the inferior animals, who have periodical fits of sexual appetence, during which the uterine excitement is intense and overwhelming, completely subduing their whole system for the time, we sometimes see instances in which, either after unfruitful coition, or without any previous intercourse with the male, milk has formed in the teats, and other symptoms indicative of pregnancy, and even of parturition, have been observed. Thus, Harvey speaks of such a state observed in bitches, who, having admitted coition, without success, yet afterwards appeared in distress, at the time their gestation would have terminated, had they conceived; "nay, some of them," says he, "have milk, or beestings (as they are called) in their teats, and are obnoxious to the distempers incident to those who have really puppiet." The following fact came under my own observation. A friend of mine had a favorite, and very valuable sporting bitch, which he was anxious should not breed; in order to prevent which, she was always carefully locked up, whenever she became in heat, so that intercourse with the dog was prevented; but on several occasions, when the time expired, which would have been that of her bringing forth, had she been allowed to breed, she was observed to be very dull, to wander about the whole day, as if seeking for something, and presently afterwards her teats used to fill with milk, in such abundance as to drop from them on the ground.

Notwithstanding, however, the exceptions established by such facts as the foregoing, we should attach great consequence to the presence of milk in the breasts, and if found in connection with others of the rational symptoms of pregnancy, it ought to go a great way in confirming our belief in the existence of that condition, especially if occurring in a woman who had never borne a

¹ Ent's translation, p. 540, ed. in 4to. of 1766, p. 593, tom. ii.

child, or been pregnant before: but, altogether, it is a sign which we cannot expect to make generally available as a guide in forming our opinion in a doubtful case; because, in most instances, milk is not secreted until after delivery, and when it does form during pregnancy, it is not until a period has arrived which presents other modes of judging, less liable to uncertainty.

Not long since, Dr. Peddie published¹ the results of two years' investigation, from which he concludes, that "the most invariable sign of gestation, prior to quickening, is to be found in the presence of fluid in the breasts:" and that "the absence of the secretion will afford the surest evidence that the suspension of the catamenial flux is an abnormal deviation from nature's course." This test he declares he has "never found to fail, in regard to those who were gravid for the first time, or in regard to those who were not pregnant at all."

He restricts the value of this test to first pregnancies, "in the early months of which," he says, "the secretion has seldom the external appearance of milk, but is serous-looking, and often very viscid and syrupy; when submitted, however, to the microscope, the characteristic milk globules will at once be detected, and these will be seen agglomerated *en masse*, the solid portion being, at this period, in a large ratio to the fluid, which latter is peculiarly glutinous. Mixed with these groups, will be perceived an abundance of large oil globules and colostrum granules, as in the green milk of parturition. There are sometimes found, also, a few epithelial lamellæ, which have been separated from the lining membrane of the excretory ducts, and which have either not been transformed into colostric masses, or, if this has been so, they have only parted with their mucoid and granular contents."

Having thus given an accurate abstract of Dr. Peddie's views on this point, on which I think his observations both interesting and deserving of much consideration, I feel bound to say that, consistently with my present experience, I think he greatly overrates the value of this test of pregnancy; because, as he himself states, it is only applicable to one class of cases, namely, first pregnancies; and often in these, as well as in many instances indeed of subsequent pregnancies, no fluid can, according to my

¹ Edinb. Monthly Med. Journ., Aug., 1848.

observation, be obtained from the breast in the early months; so that here would be another large class of cases to which such a test could not be applied, or, if applied, would, according to Dr. Peddie's own rule, prove that pregnancy did not exist; and, lastly, we must remember the possibility of milky secretion being formed in the breast independently of conception, or even intercourse, as in the instances which have just been related.

CHAPTER V.

QUICKENING AND MOTIONS OF THE FÆTUS.

I WISH, in the first place, to observe that I use the word quickening reluctantly, and only in compliance with a long-established usage, because, in its literal and proper meaning, it was adopted from the old and barbarous idea, that at a certain period of gestation, life was suddenly infused into the fœtus,¹ an error which the continued use of the term is obviously calculated to foster and prolong. I would, then, be understood as meaning by it, no more than the first sensation experienced by the mother, of the life of the child within her womb, and not that the child then becomes, for the first time, endowed with life, which is, however, the notion still generally prevalent in society.

It appears very unaccountable that such an absurdity should have received, not merely the sanction of popular belief, but that it should form the grounds of law in most civilized countries, our own not excepted; for the English law adopts the distinction, and, with the Stoics, considers the fœtus before quickening as inanimate, or merely *portio viscerum matris*, but as afterwards endowed

¹ Hippocrates maintained that the male fœtus became animated in thirty days after conception, while the female required forty-two. The Stoics considered the fœtus as inanimate during the whole period of utero-gestation, which opinion prevailed until the time of Antoninus and Severus, when it yielded to the more popular doctrine of the sect of the Academy, who maintained that the child became animated at a certain period of gestation. In modern times Zacchias proposes sixty days as the limit. Vide Beck's Medical Jurisprudence.

with life, and on this principle, acts in the award of punishment for crime. Thus, in a law enacted in 1803, called the Ellenborough Act, it is ordained, that if any person shall wilfully or maliciously use means to cause or procure abortion in a woman, *not quick with child*, he shall be declared guilty of felony, and may be fined, imprisoned, set in the pillory, publicly whipped, or transported for any term not exceeding fourteen years; but if the offence be committed *after quickening*, it shall be punishable with death.

This law has been, and I think justly, designated as immoral, unjust, and irrational; as tempting to the perpetration of the same crime, at one time, which, at another, it punishes with death; while, in the words of the admirable Percival, "to extinguish the first spark of life is a crime of the same nature, both against our Maker and society, as to destroy an infant, a child, or a man; these regular and successive stages of existence being the ordinances of God, subject alone to his divine will, and appointed by sovereign wisdom and goodness, as the exclusive means of preserving the race and multiplying the enjoyments of mankind."¹

In like manner, when a woman pleads pregnancy in bar, or stay of execution, the court orders an investigation as to whether she is *quick with child* or not,² for being merely pregnant will not be sufficient,³ as in the miserable case of Mary Anne Hunt, already related, p. 64; and if she be pronounced *quick with child*, execution shall be stayed, until either she is delivered, or proves, by the law of nature, not to have been with child at all. In France and Scotland, the law is at once more merciful and more consistent with the laws of nature, and with common sense, when

¹ Percival's Works, vol. ii. p. 430, 1.

² A jury of matrons is the tribunal appointed by law, for the determination of this difficult and vital question, but it is to be hoped that the legislature will now intrust it to competent persons, and not risk again a repetition of such a blunder as occurred at Norwich in 1833, for a full account of which most interesting case, see London Med. Gazette, April 6, 1833. For some more detailed observations on this subject, see Chap. II. p. 64, et seq.

³ "Here again, the law of the land is at variance with what we conceive to be the law of nature; and it is at variance with itself, for it is a strange anomaly that by the law of real property, an infant *en ventre sa mère* may take an estate from the moment of its conception, and yet be hanged, four months afterwards, for the crime of its mother."—*Paris and Foublanque*, vol. iii. p. 141, note.

it provides that "if a woman condemned to die states that she is pregnant, and if it be proved that she is so, she shall not suffer punishment until after her delivery."¹

It is perfectly monstrous and absurd to suppose, for a moment, that the foetus does not enjoy vitality from the first moment of its existence, and, of course, long before the sensation of quickening is felt by the mother. "The communication of life," says Dr. Cummin, "is the immediate consequence, if not the very essence, of the act of conception;" and if it be asked, why no indications of life are given before the time at which quickening generally takes place, the obvious answer is, that the absence of any consciousness on the part of the mother, relative to the motions of the child, is no proof whatever that such motions do not exist.² Of this fact, the writer can speak with certainty, having now, in several instances, by applying the hand to the abdomen, distinctly felt the motions of the foetus in utero, while the mother had no perception of them, at the moment that they were perceptible to my hand, and this has happened both before and after quickening. This observation of mine has been since confirmed by Baron Dubois.³ This is, undoubtedly, very difficult to account for, but, certainly, not less important than singular; and, from the number of times I have met with it, I regard it as of frequent occurrence. The following was a remarkable instance of the kind: Some years ago, M. H., a married lady, who had menstruated for the last time on the 10th of November, came to Dublin in March, on the 21st of which month a consultation was held to determine whether she was laboring under a disease of the womb, or not; as she had been previously assured by her medical attendant, that she could not be pregnant, because she had not felt the child, nor had sick stomach, with which she had always been much distressed in former pregnancies. On examination, the writer distinctly felt, through the abdominal parietes, the limbs of the foetus in motion, as did also Mr. Cusack and Dr.

¹ Code Pénal, art. 27. See Foderé, tom. i. p. 428. See Observations in Chap. II. pp. 55, 65.

² Vide Beck's Medical Jurisprudence, p. 216, ed. 5th; Gardien, *Traité des Accouchemens*, tom. i. p. 508; and Frank, *Epit. Hom. Morb. Cur. de Retentionibus*, lib. vi. p. 303.

³ *Gaz. des Hopitaux*, Mars 20, 1841.

(now Sir Henry) Marsh, and yet, the lady herself had no consciousness whatever of any such sensation,¹ nor did she *quicken* till the second week of the following month, April, and was delivered of a healthy boy on the 9th of August. In addition to considerable pelvic pain and irritation of the bladder, with very sedimentous urine, the symptom which had excited the greatest alarm in this lady's case, was one which, at the time, I had never met with, but have seen several other instances of it since; for about a month previous to her coming to town, she was occasionally sensible of pain in the right iliac region, and, at the same time, a firm tumor could be felt *gathering*, as she expressed it, in the seat of the pain; and both were considered as the effect of disease. During our visit this happened, and I had an opportunity of examining it, and ascertained that it arose from partial spasmodic contraction of some of the uterine fibres about the right cornu of the uterus, probably having its seat in the orbicular muscle which surrounds the orifice of the Fallopian tube. I kept my hand in contact with the hard tumor thus formed, until it gradually relaxed and softened down, so as not to be any longer distinguishable from the rest of the uterus, which lay in the right iliac hollow. This had never occurred in any of her former pregnancies, nor did it in any of three subsequent ones.

It may be observed here that the facts of this case are completely in opposition to the explanation of quickening given by Dr. Royston and others, who suppose it to be coincident with, and resulting from, the sudden ascent of the uterus out of the pelvic cavity, for here the uterus could be distinctly felt in the abdomen and the child within it, and yet the lady did not *quicken* for nearly three weeks after.

Neither will they agree with the theory more recently propounded by Dr. Tyler Smith, that the sensation of quickening "depends upon the first peristaltic actions of the uterus, and that the date of quickening marks the time when the contractile tissue of the uterus is so far developed as to admit of these contractions,"² for here, the uterine contractions had been so distinctly recognized, as to give rise to the idea of morbid action for

¹ See a very striking case presently to be quoted from Depaul, at p. 121.

² On Parturition, &c, p. 105.

several weeks before the sensation of quickening was felt by the mother.

Neither will they square with the theory of Depaul, who maintains that "the seat of the sensation of quickening is in the parietes of the abdomen, and not in those of the uterus;"¹ and he thinks that all doubt of the accuracy of this view is removed by the circumstances of a case which he records,² in which a pregnant woman with paraplegia from disease of the spinal marrow, had no consciousness of the motions of her child during the whole time of pregnancy, although these were so strong in the latter months as to alter frequently, and most remarkably, the form of the uterine tumor: and the poor mother used to indulge herself, by watching with the eye those movements which she had no longer the power of recognizing by the ordinary means of sensation.

The fact here related is undoubtedly full of interest, but I confess I cannot perceive how it proves that the seat of the sensation of quickening is in the abdominal parietes.

In attempting to make a knowledge of this phenomenon available in any inquiry as to the existence of pregnancy, even where there cannot be supposed any intention, or motive on the part of the woman, to deceive, we obviously labor under this disadvantage, that except we are, at the time, able to feel the motions of the child, we can have no evidence, except her statement, as to the fact of quickening, or otherwise; and nothing is more certain than that she may be completely mistaken, on both sides of the question. I have just related a case in which motion of the child, perceptible to the hand of another, was not felt by the mother; and several other instances of the same kind have occurred to me. On the other hand, the examples of women who have supposed, and firmly believed, that they had quickened, when no such thing had occurred, are numerous to notoriety; indeed I believe we may adopt the assertion of Dr. Hamilton, "that no woman ever yet fancied herself pregnant, without also persuading herself that she felt the motions of the child." I remember being, some years ago, called in great haste to see a lady, the mother of seven children, who was said to be in pre-

¹ *Traité de l'Auscultation Obstetricale*, p. 390-1.

² *Ibid.*, p. 292.

mature labor, at seven months and a half, accompanied with hemorrhage. On my arrival, her husband, who was a physician, mentioned, among other things, that she had quickened at four months and a half, and had, from that time, continued to feel the child as distinctly as in any of her former pregnancies, adding *that he had himself repeatedly recognized its movements*; on examination, however, I could discover no child in utero, and the case terminated in the expulsion of a few coagula from the uterus, without any fœtus whatever.

A mistake of this kind is seriously interwoven with the history of England, as having occurred in the person of Queen Mary, who was so certain of having felt the child stir in her womb, that dispatches were sent to inform foreign courts of the joyful event, but it turned out to be only the effects of bad health, and the commencement of a dropsy; which disappointment, conjoined with other annoyances of a domestic nature, so irritated the queen, that she totally lost her temper, and was guilty of some disgraceful acts of unjustifiable severity.

This circumstance is thus noticed by Hume: "The queen's extreme desire of having issue had made her fondly give credit to any appearance of pregnancy; and when the legate was introduced to her, she fancied that she felt the embryo stir in her womb. Her flatterers compared this motion of the infant to that of John the Baptist, who leaped in his mother's belly at the salutation of the Virgin. Dispatches were immediately sent to inform foreign courts of this event; orders were issued to give public thanks; great rejoicings were made; the family of the young prince was already settled; for the Catholics held themselves assured that the child was to be a male; and Bonner, Bishop of London, made public prayers be said that Heaven would please to render him beautiful, vigorous, and witty. But the nation still remained somewhat incredulous; and men were persuaded that the queen labored under infirmities which rendered her incapable of having children. Her infant proved only the commencement of a dropsy, which the disordered state of her health had brought upon her."¹

"The indifference and neglect of Philip, added to the disap-

¹ History of England, ch. xxxvi.

pointment in her imagined pregnancy, threw her into deep melancholy, and she gave vent to her spleen *by daily enforcing the persecutions against the Protestants*, and even by expressions of rage against all her subjects."¹

The length of time during which a patient, or her friends, will cherish a delusion of this sort would be incredible, if we had not the proofs before our eyes. Some years ago, a case was submitted to me for an opinion, in which the foetus was supposed to be extra-uterine, and its motions to have been constantly felt, both by the patient and her medical attendant, for *nine years*. I do not, however, mean to have it inferred that we should not pay attention to the statements of married women on this subject: on the contrary, we should attach great value to the assertion of a person who has already, and perhaps repeatedly, experienced the sensation, and has, at the same time, no conceivable reason for wishing to deceive; but, for the reasons already stated, we cannot yield implicit credence to such representations; they may be mistaken, or they may have strong and powerful motives to misrepresent, known only to themselves. In cases of criminal, or even ordinary legal investigations, there is always a motive to influence the representations made by the woman, and we can only give credence in proportion as the account may appear to us to correspond to other circumstances or conditions of the case of which we are satisfied. Should we be able to feel the movements of the foetus, of course we could have no doubt on the subject; but it must not be forgotten that such an examination is liable to be unsatisfactory, or even lead us into error, if great caution be not observed. It may be unsatisfactory, because it not unfrequently happens that even in women who have really quickened, and have been for several weeks conscious of the motion of the foetus, we are unable either to feel the child, or recognize its movements, even though every circumstance of the case should be natural and healthy; and, should there be any anomalous or morbid condition coexisting, the difficulty may be amazingly increased; thus, in the case of M. C., in which ascites was combined with pregnancy advanced to the seventh month, it was found impossible to feel the child by any mode of examina-

¹ History of England, ch. xxxvii.

tion that could be adopted, though it was made with great care, both internally and externally, by the writer, and by one of the most experienced practitioners in Dublin. This case gave rise to great embarrassment, and recourse was repeatedly had to the application of the stethoscope in the most skilful hands; but neither the pulsation of the foetal heart, nor the uterine souffle, could be heard, though it happened that several times during our examinations, the woman assured us that she was, at the moment, sensible of active movements of the child. The presence of an abdominal tumor, especially if large, or attached to the uterus, sometimes renders the foetal movements both very difficult of detection by the hand of the examiner, and very slightly perceptible to the mother, as in the case already alluded to, p. 106.¹ Occasionally, circumstances, whose influence it would be very difficult, if not impossible, to explain, appear to have the power of suspending foetal motion, without, however, inflicting any injury on the child; as in the two following instances, in one of which, a strong mental emotion, and in the other, a fall, was followed by a cessation of these movements. A lady, some years married without having a child, on the birth of which, however, the succession to a large property depended, at length became pregnant, quickened at the usual time, and went on well up to the seventh month, when intelligence was suddenly communicated to her of the death of one she greatly loved, which produced a great shock,² followed by repeated faintings, and for several days she felt no motion of her child, which had been previously distressingly active. She now became miserably unhappy, was convinced that the shock had killed the child, blamed herself for having given way to it, and was, in short, in a state bordering on distraction. Under these circumstances, I was requested to see her for the purpose of ascertaining whether the child was really alive or not; by the most careful manual examination, no motion could be detected, but on applying the stethoscope I heard distinctly both the uterine souffle and the pulsations of the foetal heart; shortly afterwards, the child resumed its former activity, and in proper time was born alive and healthy. In the other

¹ See Dublin Med. Journal, vol. vi. p. 421, 422.

² See General Observations, chap. i. p. 31, *et seq.*

case, a lady, in the eighth month of pregnancy, in crossing the top of a staircase in the dark, slipped her foot, and was precipitated to the bottom, striking her side forcibly against the hand-rail; she was much hurt, and greatly frightened; it was on the eighth day after the accident that I was called to see her, when I found her fully impressed with the belief that the child was dead, as she had completely ceased to feel its movements, since the day of the fall; during my examination, however, these motions returned, apparently from my disturbing the position of the child, which was afterwards born alive and vigorous. I may observe here, as a point of diagnosis, that in both these instances, I felt almost convinced beforehand that life had not been extinguished in the child, because no diminution had taken place in the development of the abdomen, and the breasts maintained their size, firmness, and sensibility.

Desormeaux tells us of a patient of his who felt her child at the ordinary period, and its movements continued remarkably strong for three weeks, after which, they ceased for a whole month, and nothing could excite them: the child was born alive and healthy.¹ In Schmitt's ninth case, second division, the patient felt nothing, but a kind of throbbing above the pubes, up to the end of the seventh month, and during the remaining two, no sensation of motion whatever was experienced,² yet the child was born alive and well. In this case, there was scarcely any liquor amnii in the uterus, which was moreover almost as hard as scirrhus; which circumstances, together with some others, formed a combination rendering pregnancy doubtful *even after the labor had begun*.

On the other hand, very experienced and competent judges have fallen into the error of supposing that they had felt these movements in women who in reality were not pregnant at all: two instances of which came under my own observation, and Dr. Dewees relates a very marked instance of such an error occurring to himself. A young lady had her menses suppressed for several months; her belly swelled very much, the breasts became enlarged, she had nausea and vomiting in the morning; in short,

¹ Dict. de Médecine, tom. x. p. 399.

² See also La Motte, Obs. xxv.

she had all the usual symptoms of pregnancy. "Examining the abdomen carefully," says Dr. Dewees, "I found it considerably distended; there was a circumscribed tumor within it, which I was very certain was an enlarged uterus. While conducting this examination, *I thought I distinctly perceived the motion of a fœtus.*"¹ The case, eventually, proved to be accumulation of menstrual fluid in the uterus.

I may just observe here, that I have now had several opportunities of recognizing such sensations as that above described by Dr. Dewees, and under similar circumstances; and I am quite satisfied that they are produced by contractile efforts of the uterus to expel the accumulation within it, and are often accompanied by severe pain: a partial form of this kind of contraction has been already noticed in the case of M. H., p. 119: but it was observed very strikingly in a case of imperforate hymen of more than usual interest, since under my care, the details of which will be found in the *Dublin Medical Journal* for August, 1853, p. 209.

In a case of abdominal tumor examined by Dr. Ingleby,² he says he was misled by a distinct crawling movement perceptible within it; and the same patient had had, some time before, what were considered strong symptoms of pregnancy, with very sensible movements resembling those of a fœtus, but the discharge of a quantity of fluid per vaginam put an end to the delusion. The causes of these deceptive sensations are not few: in many, they are produced by air in the intestines passing quickly from one part to another; in others, they seem the effect of nervous irritability, and are observed to happen most frequently in hysterical females: sometimes they are produced by a spasmodic twitching of some of the abdominal muscles, like that which we frequently see take place in the eyelids, or, as just noticed, by a partial contraction of the fibres of the uterus when distended with air or fluid.³ In Chap. XI., Sect. iii., three cases of hydatid pregnancy will be related, in which these anomalous sensations of motion were remarkable. In some instances, the pulsation of

¹ Essays on several subjects connected with Midwifery, pp. 337-8.

² Dublin Medical Journal, vol. vi. p. 356.

³ See Gardien, tom. i. pp. 542, 562, and Harvey's case of the noble matron, p. 481 of Ent's translation.

the aorta, or other great arteries has been the source of the delusion, especially when felt acting on a tumor, as in the case of an enlarged ovary; but from whatever cause arising, there are two curious facts to be noticed concerning these motions; first, that they are not only perceptible by the woman herself, but easily recognized by others, and not only by the application of the hand, but they are also occasionally visible¹ externally, like the true ones, as I have myself seen; secondly, that in several such cases there has been, at the termination of the imaginary period of gestation, an accession of pains strikingly resembling those of labor;² the facts of three cases are fresh in the writer's recollection, in which, under such circumstances, he was brought to attend patients in labor who were not pregnant: it may be added here, in the way of a general observation on these false motions, that when a woman who has been pregnant before, especially if she has been so frequently, and is again exhibiting equivocal symptoms of that condition, declares that the sensations of motion now experienced are totally unlike those formerly felt by her, such dissimilarity should be regarded as suspicious, and detracting from the probability of her being healthily pregnant, if so at all.

Another source of error would, of course, be found in a power which some women have been found to possess of simulating the motions of the child by certain actions of the abdominal muscles. The writer never met with any such case; but Dr. Blundell, who mentions the fact,³ tells us of a woman who was seen by the late Dr. Lowder and other eminent accoucheurs, who simulated these movements so exactly, that, had they judged from this sign alone, and not made an internal examination, they would have pronounced her pregnant. The mock prophetess Joanna Southcott had also acquired this accomplishment, which appears to have assisted her greatly in carrying on her imposture, by enabling her, when examined, to imitate the foetal movements, and that

¹ As in Schmitt's third case, first division, and Gardien, tom. i. p. 543.

² See Harvey's case of the physician's daughter, already quoted, p. 81. Schmitt's thirteenth case, first division, and a very remarkable one by Klein, *Journal der practischen Heilkunde*; herausgegeben von Hufeland und Harles; 1815. Band 2, St. 3.

³ *Op. citat.*, p. 156.

too in different parts of the abdomen. In his account of her case, Dr. Reece says: "I felt something move under my hand, possessing a kind of undulatory motion, and appearing and disappearing in the same manner as a foetus." "When these symptoms (enlargement of the breasts and abdomen) were accompanied by a sensible motion of the womb, I never could hesitate in pronouncing it a case of pregnancy, and this was actually my opinion of her situation." I have, very often indeed, met with another kind of simulated foetal motion, arising, not from design, but from involuntary twitching, or jerking, of some of the abdominal muscles; and in some instances, it resembled to an astonishing degree, the sudden movements of a child, though pregnancy did not exist. Dr. Hamilton has remarked this also.¹

We must now turn our attention to the period of pregnancy at which we may, in general, expect that this phenomenon shall have really occurred, and then to the kind of sensation which the foetal movements may be expected to communicate to the feelings of the mother, or to the hand of an examiner, at different periods of utero-gestation. Experience has shown that it happens from the tenth to the twenty-fifth week; but, according to my experience, the greatest number of instances will be found to occur between the end of the twelfth and sixteenth weeks after conception, or, adopting another mode of calculation, between the fourteenth and eighteenth week after the last menstruation, which very nearly agrees with the statement of Dr. Hamilton,² grounded on forty years' experience, that quickening "takes place at the end of four calendar months after conception." The result of Roederer's investigation of this point was, that, of one hundred women, eighty quickened at the fourth month, that is four out of five; of the remaining twenty, some quickened at the third, and some went to the fifth. Hippocrates says that, as a general rule, the male foetus is felt to move at three months, and the female at four; the difference he attributes to the greater strength of the male.³

I believe there are some individuals in whom quickening takes place almost exactly at the same period, in several successive

¹ Pract. Obs., 2d ed., p. 92.

² Op. jam. cit., p. 83.

³ On the Nature of the Child, sec. 11.

pregnancies; a well-marked instance of this occurred to me, some time since, in a lady who had given birth to seven children; in August, she told me that her last menstruation had terminated on the 10th December; that she had quickened on the 10th April, and would require my attendance on the 10th September; because, in all her former pregnancies, labor had supervened exactly five months from the day of quickening; she was delivered on the 9th September. I have met with a few other instances of the same kind; but the occasional occurrence of such coincidence ought to be regarded as the exception to the general rule, that the time of quickening will, in the majority of cases, be found to vary in the same person in successive pregnancies; and it is right that this should be understood, because a contrary belief constantly leads patients to assign a particular time for their labor, in which they are afterwards disappointed; and sometimes the non-occurrence of quickening at the expected time has given rise to doubts as to the existence of pregnancy, or to a belief that the symptoms were those of disease, as in the case of the lady M. H., p. 119.

Under ordinary circumstances, when quickening does occur, but especially if it happens in conjunction with the sudden ascent of the uterus out of the pelvis, the woman is apt to feel an unusual degree of nervous agitation, which not unfrequently ends in faintness, or even complete syncope, after which she is sensible of a slight fluttering sensation, which, from day to day, becomes more distinct, until she fully recognizes the motions of the child.

The first instance of early quickening I ever met with, of which I was certain, was in the case of a lady, who must have conceived on the 10th of November, and she quickened on the 28th of January, the interval being eleven weeks and two days, and 201 days before delivery, which occurred on the 17th August; and in another case, which I met with since, quickening was felt on the 27th September, and labor took place on the 13th April, the interval being 198 days; while in the same lady's former pregnancy, the interval was only 163 days, or, dating from conception, it took place, in the one instance, in the twelfth week, and in the other, in the seventeenth. Dr. Hamilton¹ knew of its happening

¹ Pract. Obs., 2d ed., p. 107.

in the eleventh week. Puzos says that, in some women, the movements of the child are perceptible at two months, though, in general, not till four months and a half, and in dropsical women, perhaps till six or seven months.¹ Denman says: "Quickening happens at different periods of pregnancy, from the tenth to the twenty-fifth week, but most commonly about the sixteenth after conception."² I confess that, with all my respect for Denman's authority, and appreciation of his sagacity and truthfulness, I felt, for a long time, sceptical as to the occurrence of quickening at such early periods; but, in addition to the first case above related, I met with another, more recently, at a still earlier period, so that I can no longer doubt. The particulars of this latter case are these: On the 13th July, I examined a lady not long married, to ascertain whether she were pregnant; on this occasion, quickening was distinctly perceived; and delivery did not occur until the 12th February, the interval being 213 days; so that, if 280 days be the period of gestation, quickening must have occurred sixty-seven days after conception; that is, in the tenth week, but wanting three days of ten weeks. I can speak of this case with more than the ordinary degree of certainty, having for special reasons existing at the time, carefully noted the facts and dates myself.

An idea prevails almost universally in society that quickening takes place exactly at the middle of gestation, and that labor ought to occur four months and a half afterwards; but, in far the greater number of cases, the latter interval amounts to, or exceeds, five months.

Some, on the other hand, do not quicken until much later periods of gestation. The writer was in the habit of attending a lady who, in seven successive pregnancies, felt the child for the first time, in the sixth month, and once in the seventh. A case will be related in Chapter XI., Sect. 1, in which quickening was first felt on the 15th February, and mature delivery took place on the 21st May; the last menstruation had been on the 10th August. Baudelocque mentions that some of his patients did not quicken until after the sixth or seventh month, and, "in one

¹ *Traité des Accouchemens*, &c., p. 58.

² *Introduction to Midwifery*, &c., 5th ed., p. 217.

of these women," he adds, "whatever we could do, and notwithstanding the very obvious ballottement of the child in utero, which we could perform by a finger introduced into the vagina, its motions could not be ascertained, either by the mother, or the accoucheur who examined her, till the end of the seventh month."¹

There is a class of cases in which the postponement of quickening is only apparent; namely, those instances in which conception has only occurred after some months of suppression; and hence, also, gestation is in such cases supposed to be protracted, when it is perfectly normal.

"There are some cases," says Johnson, "where the motions are not felt till near the end of the reckoning."² A lady, the mother of nine children, applied to Dr. Reid, on July 25th, having had no menstrual discharge during the previous sixteen months; for the last four or five weeks only, she had felt a sort of fluttering motion in her abdomen occasionally, but once or twice daily. She was confined on September 10th, of a full-grown child, and there was an unusual quantity of liquor amnii.³

It is asserted by some, that certain accidental states of the maternal system, such as plethora, whether general, or affecting the uterine circulation, have the effect of postponing the sensation of quickening, and of rendering it much less distinct.⁴ I will not venture to affirm, or deny the relation here supposed, but there appears an obvious coincidence between such a principle and the facts of a case recorded by Schmitt, in which the woman, who had been three times pregnant, had never quickened until after being bled,⁵ a practice which Desormeaux and La Motte recognize⁶ as productive of such an effect, under similar circumstances. When pregnancy happens to be complicated with ascites, or with dropsy of the amnion, the motions of the child are not, in general, felt by the mother till a later period than usual, and are then perceived less frequently and less distinctly than in other cases; but it is quite erroneous to assert, as some have

¹ *Art d'Accouchement*, ed. 1822, pp. 205, 206.

² *New System of Midwifery*, p. 102.

³ *Lancet*, 1853, vol. ii. p. 237.

⁴ *Velpeau*, tom. i. p. 196; *Desormeaux, Dict. de Méd.*, tom. x. p. 399.

⁵ Fifth case, first division.

⁶ *Loc. sup. cit.* and *La Motte, Obs.* xxvii.

done, that under such circumstances these movements are not experienced at all; it is, however, perfectly true that, by the hand, it may be found impossible to detect them, as in the case of M. C., alluded to p. 123.

A fact much more remarkable than the occasional postponement of this occurrence, is its total absence, during the whole period of gestation, notwithstanding the subsequent birth of living and healthy children. Two instances of this came under my own observation, and the fact is mentioned by several writers of authority. Levret speaks of a woman who felt no motion of her child in two successive pregnancies. "I was several times consulted," says Baudelocque, "about a woman whose pregnancy appeared doubtful to her till the last moment, as well as to the physician, because the motions of the child could not in any way be perceived; and nothing that we could do, even at eight months and a half, could excite them; the child, however, was born healthy, and as strong as usual."¹ Gardien met with two instances;² and Gooch says, on this subject, "there are cases, though rare, in which the child has not moved during the whole of pregnancy, although it has been born alive and vigorous: of this I have known one instance, and read of others."³

The most recently recorded case of this kind, of which I am aware, is a very remarkable one by Dr. Campbell, of Edinburgh, who "knew a lady, the mother of nine children, who, except in her first gestation, never had any feeling of movement after she quickened, and who, were it not for the gradual enlargement of the abdomen, would not have known that she was pregnant: but she was inanimate and passive as a polypus: and what was most singular, her progeny, unhappily, were as sluggish as herself."⁴ The above is one of many instances in which the activity of the foetal movements has appeared to correspond to the greater or less sensibility of the mother; or, perhaps, it would be more

¹ See Heath's translation, vol. i. p. 240. This was probably the case already related from Capuron, Chap. II. p. 67.

² Tom. i. p. 509. See also La Motte, Obs. xxvi. and xxvii.

³ Account of Diseases of Women, p. 203. Dr. Dewees also relates a similar case, "where the motions of the child were never perceived during the whole period of utero-gestation."—*Compendium of Midwifery*, p. 105.

⁴ Introd. to Midwifery, p. 489.

correct to say, the perception of them, as I think we have sufficient ground for believing, that women of a lively temperament, with a delicate and sensitive nervous system, feel the sensation of quickening earlier and more distinctly than others.

Dr. Heming also says he attended one case of this kind.¹

When we wish to feel, or excite the motions of the child in utero, we may expect to succeed by adopting either such a manual examination of the abdomen as we are accustomed to make, when examining for a tumor in that cavity, pressing with the hand backwards towards the spine, or from each side towards the centre; or by applying one hand firmly against the side of the uterine tumor, while we impress the opposite side quickly with the fingers of the other hand.

I think it cannot be denied that, by the method long since recommended by Wrisberg, namely, that of laying the cheek on the abdominal integuments, we shall, not unfrequently, be enabled to detect the foetal movements, when we would fail to do so by the hand.

Sometimes, the simple application of the spread hand over the front of the abdomen is sufficient for our purpose; at other times, we shall best succeed by the sudden application of the hand previously rendered very cold by immersion in water, or contact with a marble chimney-piece: this occasionally has the effect of making the foetus start, and communicate a very distinct sensation of its movements, the character of which will differ most materially, according to the period of gestation at which the examination is made.

During the fourth or fifth month, the sensation communicated to the mother, or to the hand of the examiner, amounts to little more than a slight pat or throb, sometimes scarcely more than a flutter, which is gone almost as soon as we are aware of its occurrence, and no pressure, or other manoeuvre of ours may, perhaps, induce a repetition of it: if recognized at an earlier period than this, the sensation will be proportionally more indistinct; I have heard it described by patients as no more than a ticking, or as resembling the tremulous motion of a little bird when held in the hand; at such periods, it may be well to remember that, with

¹ *Lancet*, June, 1844, p. 410.

many persons, there are particular times of the day when these motions are most strongly and frequently felt: if this can be ascertained, we should avail ourselves of the circumstance, and select that hour, if possible, for making our examination. In the sixth and seventh months, the distinctness of these motions is greatly increased, and we are conscious that the moving body has considerable bulk, and not unfrequently, at this period, by pressing inwards we can bring our hand in contact with it again and again, and feel it start away, or move through a space of an inch or two, passing underneath our hand with a rolling or gliding motion, which is, in some cases, most distressingly incessant, and harassing to the woman, even depriving her of rest.

In the last two months, we have principally the rolling motion, though sometimes the position of a limb is changed with great quickness and force, which we cannot only feel, but we may often, without difficulty, grasp the limb, which occasionally causes a distinct elevation of the abdominal parietes, so that it is not at all unusual, at this period, to find those movements visible through the ordinary dress of the patient. It is of importance that these varieties in the characters of the foetal movements should be borne in mind, because our opinion should be influenced not alone by their mere existence, but also by their correspondence, or want thereof, to the period of gestation indicated by other symptoms.

It has been asserted by Nauche, H. F. Nægele, and Depaul, that the active motions of the foetus may be recognized, by auscultation, at periods antecedent to those at which they could be discovered by the hand of an examiner, or perhaps felt by the mother; the latter author declaring, that out of twelve cases of three months' pregnancy thus examined, he heard these motions in nine; but I shall not here enter further on this point, but reserve, for the observations on auscultation, a more extended notice of it.

It is obvious that there are two species of movements of the foetus which may be recognized; one of which is active, and depends on the exertion of its muscular power, and of course implies life; the other passive, the result of mere change of place, or situation effected by some external, or other accidental agency, as a new posture of the mother, or partial contractions of the

uterus; which changes, or removals are capable of being recognized equally in the dead and the living foetus:¹ this latter form, which is more properly mobility than motion of the foetus, may be most effectually ascertained by a manœuvre, generally known by the name of ballottement, for which, however, the term reper-cussion will answer equally well: this mode of examination I shall, in a future chapter, fully describe; for the present, only observing that the latter kind of movements of the foetus, which are here called passive, occasionally give rise to very erroneous impressions in women who are carrying dead children. Thus, I have been repeatedly told by patients in labor, that they had continued to feel the child move, up to the time they were taken ill or even after, and presently, they have given birth to a child evidently dead for weeks. Such facts show strongly, how little importance should be attached to statements regarding these motions, or supposed motions of the child in cases of difficult labor.

It is also to be noticed here, that in those cases where women erroneously suppose themselves three or four months pregnant, and, of course, feel the movements of the child, they constantly describe these movements as having the characters which could only exist at an advanced period of gestation; which, in itself, should always excite our suspicion of the real nature of the case.

From the facts here stated, it appears, then, that in addition to the passive mobility of the child just referred to, there are at least three kinds of motions to be met with, when examining the abdomen in cases of real or supposed pregnancy.

1. Those produced by the active movements of the foetal limbs.

2. Those resulting from involuntary, or voluntary twitchings or jerkings of the abdominal muscles.

3. Those arising from irregular, or partial, contractions of the uterine fibres.

But although these may, and sometimes certainly do, imitate each other very closely, I do not hesitate to say, that it only requires sufficient time in examining, and sufficient consideration

¹ These are usually distinguished by the terms *active* and *passive* motions. Schmitt proposed to call them *organic* and *mechanical*.

of all the other affirmative and negative evidence, to enable us to assign to each kind their true value, and prevent our being misled into giving an erroneous opinion. I cannot therefore help thinking that Dr. Tyler Smith has stated too much in saying that in pregnancy "the chief part of these abdominal movements do not depend upon the foetus, but are true peristaltic movements of the uterus itself:"¹ for although, in many instances, these movements are undoubtedly thus produced, in very many, also, the motions of the foetal limbs are as distinctly recognizable as they are after birth; and a limb may be actually caught by the fingers of the examiner; and then, again, "the undulating wave-like motion proper to peristaltic action"² has been, as already noticed, frequently observed in cases where the uterus was not enlarged, and where, in fact, pregnancy did not exist.

CHAPTER VI.

ENLARGEMENT OF THE ABDOMEN AND STATE OF THE UMBILICUS.

AN increase in the size of the abdomen being the necessary result of the development of the uterus from pregnancy, a careful examination of that part will be essentially required in every instance of an investigation as to the existence of that condition.

When conception occurs, and the ovum is received into the cavity of the uterus, the organ increases considerably in weight; and its fundus becoming at the same time developed, and presenting a broader surface for pressure from the superincumbent viscera, descends lower into the cavity of the pelvis, and so will not for the first two months, or sometimes more, produce any enlargement of the abdomen by its increased bulk.

An enlargement, however, is frequently observed at this early period; but it will be found, on examination, to arise from an inflated state of the bowels, which very generally takes place soon after the commencement of gestation, and, continuing for some

¹ On Parturition, &c., p. 96.

² Ibid., p. 102.

weeks, may cause the patient to look as large, or even larger, in the second month, than she will a month afterwards, when the tympanitic distension of the bowels has subsided: when this inflation does not take place the abdomen becomes at once flatter,¹ at first, from the descent of the uterus, and partly also from the increased absorption which so generally accompanies pregnancy: the umbilicus under such circumstances will sometimes be found more depressed,² and as if drawn inwards and downwards; in which condition it is, occasionally, the seat of an unpleasant and rather painful sensation of dragging, the part being also, at the time, somewhat tender on pressure: both this and the retraction of the part are apparently produced by the sinking of the uterus into the pelvis, which draws down the bladder, and thereby puts the ligamentous connection between it and the umbilicus on the stretch:³ the tenderness is frequently not confined to the part immediately about the umbilicus, but is felt over almost the entire surface of the abdomen, as we sometimes find it in hysteria; it is without any concurring symptom of an inflammatory kind, and appears to be, most probably, produced by the distension of the intestines.

It should be observed here, that part of the descent of the uterus is rather apparent than real; the os and cervix descending, at first, in consequence of the increase of size and elongation of the whole organ.

This state, however, soon begins to alter; about the end of the third month, the enlargement of the abdomen becomes perceptible to sight and touch, and, from this period, continues to increase gradually, from month to month, in the same proportion as the development of the uterus proceeds; while corresponding changes are effected in the state of the umbilicus, of which we shall speak in detail presently.

¹ "Mox post conceptionem uterus magis intra pelvim ita absconditur ut abdomen complanetur."—Roderer, *Elem. Art. Obst.*, p. 47.

² See Denman, p. 215, and Velpeau, tom. i. p. 182. The French have a proverb, which says:—

"En ventre plat
Enfant il y a."

³ As happens in procidentia vesicæ, of which complaint this kind of pain at the umbilicus is by some considered as a diagnostic symptom: see Clarke on Diseases of Females, part i. p. 133.

Such is the history of this change in the perfectly natural and healthy condition of the pregnant woman; but as there is, on the one hand, a host of causes which may produce enlargement of the abdomen, and be accompanied also by several others of the symptoms of pregnancy, when it does not exist, so also, on the other hand, a woman may be with child, and yet the development of the abdomen may not correspond to the period which has elapsed since conception.

When the enlargement proceeds from a gravid uterus, and four months of pregnancy have elapsed, if the patient be placed lying on her back, with the shoulders a little raised, and the limbs at the same time drawn upwards, so that the thighs shall be in a state of semi-flexion on the trunk, and the abdominal muscles thereby relaxed, and if the woman be not very fat, we shall be able to feel and trace the outline of the gravid uterus, at a height in the abdomen proportioned to the period of pregnancy; and even though we should not be able, from the fatness of the woman, the tension of the abdominal parietes, or any other cause, to feel distinctly the uterine tumor and define its circumference, we shall at least ascertain that the cause of the enlargement is something which renders the abdomen much more solid to the touch than is natural to that part, and an examination per vaginam detects the coexistence of the changes in the uterus necessarily accompanying gestation; while, at the same time, the general health of the woman is found unaffected by any symptom of disease.

When the increased volume of the abdomen is the result of morbid conditions, not affecting the uterus, as disease of the liver, spleen, &c., an ovarian tumor, or ascites, we shall, in general, without much difficulty, form our diagnosis from the history of the case; the length of time the enlargement existed (which may have greatly exceeded the whole term of gestation), the general diseased condition of the system, the character and situation of the tumor, the state of the umbilicus and breasts, the total want of correspondence in the symptoms and conditions of the case, if it were pregnancy; and, lastly, a vaginal inquiry assures us that the uterus is not enlarged. And yet, some almost incredible mistakes have been made. Smellie tells¹ of a girl twelve years

¹ Vol. ii. p. 220.

old whom he was called to see, under the idea that she was eight months pregnant. She had been visited and examined by several medical men, one of whom had offered to attend her gratis, and others had made great interest to be present at her accouchement. The matter had been advertised, and the matron got money from many who went to visit the girl. It was a case of enlarged liver.

If the uterus itself be distended, the difficulty of forming our opinion may be considerably increased, but, even then, a careful consideration of the points just referred to, and a vaginal examination will, in almost every instance, enable us to decide correctly: one class of such cases has been already noticed, p. 86, *et seq.*

When the abdomen is distended by the accumulation of fat in the omentum, or in the integuments, or by the inflated state of the bowels, the very soft and yielding condition of the part under the hand, when pressed backwards towards the spine, and the total absence of any solid tumor, as well as of the ordinary symptoms of pregnancy, will form a sufficient basis for an opinion, which may be confirmed by the depressed state of the umbilicus, which, in such cases, is apt to be considerably sunk.¹

The degree to which this state of the abdomen may simulate pregnancy and the presence of an enlarged uterus, or other defined, and apparently solid tumor, is almost incredible, but receives an impressive illustration from such occurrences as that related in Mr. Lizars's work on ovarian tumors, where we find the case of a woman with an enlarged abdomen, attributed by some to pregnancy and by others to a tumor of the ovary, for the removal of which the abdomen was opened; when it was found that there existed no tumor of any kind, but a very fat omentum and intestines distended with air. Dr. Gooch saw a similar case² in which also the abdomen was laid open, when it was discovered that the enlargement "depended entirely on flatulence and fat;" more recently still was the disgraceful and melancholy case at Berlin, some particulars of which have been already detailed.³ Perhaps the most extraordinary instance of this kind which ever

¹ As remarkable instances of this, see Schmitt's 7th and 8th cases, 1st division.

² Diseases of Females, pp. 230, 231.

³ Chap. II. p. 66.

attracted public attention was that of the antiquated virgin prophetess Joanna Southcott, who, at the age of sixty-four, pretended to be with child by the intervention of superhuman agency, and deceived many, even of the profession, some of whom actually proposed to be present at her labor. She had enlargement of the breasts and abdomen, in which latter there was felt a circumscribed tumor, supposed to be the gravid uterus. "In that part occupied by the womb," says Dr. Reece, "there was a firm circumscribed tumor, as large as a man's head, bearing the shape of the womb; I have no doubt of its being an enlargement of that organ." Motions like those of a fœtus were perceived, not only by herself, but by some of the medical men who examined her; but the umbilicus, as remarked by Dr. Sims, was "sunk in, not at all protruded, as in pregnancy:" she died, however, without the promised consummation, and on dissection, the womb was found smaller than natural, but healthy; the abdominal parietes contained four inches thick of fat, the intestines were distended with air, and the omentum, which was nearly four times its usual size, appeared "one lump of fat," but *there was no trace of the tumor which had been felt during life*, and which is supposed by some, to have been produced by the prophetess having learned to retain the urine, until the bladder became considerably distended, and to imitate the foetal movements by a jerking motion of the abdominal muscles; but from more recent observations, it seems more probable, that the supposed abdominal tumor was one of those phantom tumors which are met with, not only in cases of spurious pregnancy, but under other circumstances, in the unmarried and chaste; and of which I shall only at present say, that they have been found to disappear completely, while the woman was under the influence of chloroform, but returned again as soon as that state had passed away. They will be more particularly noticed in a future chapter on spurious pregnancy.¹

The enlargement of the abdomen from dropsy may give rise to the idea of pregnancy; but a reference to the general circumstances already adverted to, as accompanying other morbid states, will generally prevent our falling into error; from which we

¹ For a full account of this remarkable case, already referred to p. 127, see a "Statement of the last Illness and Death of Mrs. Southcott, by Richard Reece, M. D."

shall be further protected, by the consideration of some diagnostic signs peculiar to this disease, in which, besides the degree of fluctuation, and the absence of any solid tumor, the form of the abdomen when standing and lying is different from that of pregnancy, in which the abdomen retains very nearly the same degree of prominence in both postures; but in dropsy, it subsides, flattens down, and spreads out, when the patient lies supine; in dropsy, also, the symptoms of constitutional disturbance increase with the size, while in pregnancy they diminish, or cease. In ascites, there is much thirst and scanty urine, which are not observed in pregnancy, in which, also, the swelling of the feet is subsequent to that of the abdomen, but in dropsy, is more usually observed before. But it must not be forgotten that pregnancy and dropsy may exist together, and, when they do, they may present a combination of circumstances of the most embarrassing description; under which, our best guide will be a carefully instituted examination of the uterus, *per vaginam*, and of the state of the breasts, especially the areola. It has been already observed, that, in such cases, the sensation of quickening is often deferred to a later period than usual, and is apt to be very indistinct; and we are liable to be effectually prevented from ascertaining the foetal motions, or even the outline of the uterus, by the excessive tension of the abdominal parietes and the quantity of interposed water, as in a case already related, where the difficulty was insuperable even at the seventh month.¹

Again, it is a matter of common observation, that there are women who, from their height, or some peculiarity of form, exhibit their increase of size much more, or less than others, so that the abdomen will appear less at seven months, in one woman, than it does in another at five; thus rendering any opinion formed from the volume of this part, as visible to the eye, very likely to deceive. The principal of such causes are, the amount of intestinal inflation, the degree of prominence of the sacro-vertebral curve, the capacity of the pelvis, and the frequency of child-bearing; the primipara appearing, at any given period, much smaller than the woman who has borne several children:

¹ See Chap. V. pp. 123, 131.

dress, also, may be so managed as, in a great degree, to conceal the size.

The writer was once called on to attend a young unmarried female of respectability, whom he found in labor, and he was assured by her mother that, up to that hour, she never suspected that her daughter was pregnant, not having perceived any alteration in her size; and the young lady had danced all night at a ball, about a week before her delivery: she had completed more than seven months.

It is, perhaps, still more important to recollect, that although pregnancy should exist, if the child die, the development of the uterus will be arrested, and the enlargement of the abdomen will not continue to increase, but, on the contrary, will obviously diminish; the dead foetus being retained in utero for several months, and the patient, although really many months pregnant, may not exhibit any increase of size beyond what is natural to her; or, being near the end of her nine months, may not be larger than she was at four or five. The writer has seen many cases of this kind, which gave rise to great doubt. In the month of May, 1831, he was requested to see a lady who considered herself in the eighth month of pregnancy, and was rendered miserably solicitous about her condition, because she had irregular discharges from the uterus, and felt no motion of the child. On examination, her abdomen was found perfectly flat, and even depressed, and no tumor of any kind could be detected in its cavity; but the uterus, examined per vaginam, was evidently enlarged and soft, and its mouth and neck had undergone the changes which accompany early pregnancy; the breasts were flaccid, and the areola had an imperfect faded appearance. The lady had begun to experience the symptoms of pregnancy in October, which continued till the beginning of January, when they suddenly ceased, and she became liable to vaginal discharges. All doubt about the case was solved shortly after the writer's visit, by the expulsion of an ovum with a blighted foetus, which had evidently not arrived at three months' growth, and during its long stay in the uterine cavity, as an extraneous body, had become incrustated with a reddish calcareous deposit.

Dr. Gooch relates the case of a lady, to whom a similar cir-

cumstance occurred, in two successive pregnancies.¹ There are, then, two conditions, in which the size of the abdomen, instead of increasing, may diminish, or remain stationary; first, about the second month of healthy pregnancy, when the inflation of the intestines subsides; and secondly, when the ovum is blighted, or the foetus dies, the increased vascular supply being withdrawn, the growth of the uterus is arrested.

Connected with this condition of blighted ovum, and the consequences thence arising, are many considerations of great interest and importance, on which I propose to dwell fully, in a future chapter on pregnancy under unusual circumstances.

Dark Abdominal Line and Umbilical Areola.—In a large proportion of cases of pregnancy, there is observable, along the middle of the abdomen, a colored line, of about a quarter of an inch in breadth, extending generally from the pubes to the umbilicus, but, not unfrequently, thence to near the ensiform cartilage; its hue is some shade of brown, but sometimes partaking of the yellowish tint of ochre, and sometimes amounting to a full-bodied dark umber. In several instances, I have observed, in addition to this line, a dark-colored disk occupying and surrounding the umbilicus, and to which we may not improperly apply the name of umbilical areola. It has an area varying from an inch to an inch and a half in diameter, and in general it varies in depth of tint, according to the color of the hair, eyes, and skin of the woman, as do the dark line and the mammary areola; but unlike the latter, there is no turgescence, or elevation of its surface above the surrounding skin; neither are there on it any prominent follicles. Like the other analogous colorations resulting from pregnancy, this areola is liable to many varieties, having, in some cases, the well marked characters already spoken of, while in others, it is merely like a dirty patch, or soil on the skin, without any definite form, or distinct color. These two indications, although so closely identified in many respects, are not, as may be inferred from what has been already stated, necessarily found together, nor when so found, are they always equally marked. The dark line frequently exists without the umbilical areola, but I have never seen the latter unaccompanied by the

¹ Op. citat., p. 222.

former: but if the areola is of less frequent occurrence than the dark line, it is of higher value as a positive indication; inasmuch as, so far as I know, it is formed only in pregnancy; while the dark line has been observed in female cases altogether unconnected with that state, and also in males.

When both signs coexist, their relation is this; the dark line, as it ascends from the pubes, when it arrives within an inch, or less, of the umbilicus, sweeps off in a curve towards the left, and merges into the circumference of the areola, and when again leaving it, to ascend towards the ensiform cartilage, it is observed to issue on the opposite, or right side, curving towards the middle line and then running straight upwards. These abdominal discolorations are most distinct in women of dark hair and eyes, and strongly colored skin, and at advanced stages of pregnancy, and soon after delivery; the dark line, however, I have seen so early as the second month, extending from the pubes to the umbilicus, and in another case, at six months, it reached nearly to the ensiform cartilage; the umbilical areola I have not seen well marked, except at more advanced periods.

One would be disposed to expect, that the perfection of color in marks of this kind, would be in proportion to that of the mammary areola in the same person; such, however, is by no means the case, for I have repeatedly seen the latter very strongly colored, when the abdominal line and areola were scarcely discernible, or altogether absent; and on the other hand, I have seen the abdominal line distinctly marked and well colored, when there was hardly a shade of color in the mammary areola. In very many cases, the dark line is not perceptible at all, and still more frequently is the umbilical areola absent; both marks are, like the mammary areola, liable to fade if the child die during gestation; the shade and depth of color are apt to vary, in the same case, without any obvious cause. Making all due allowance for such exceptions and discrepancies, the dark abdominal line is an evidence of pregnancy entitled to much consideration, and has considerable value as a corroborative indication; if it be accompanied by the umbilical areola, I believe we have a decisive proof of pregnancy.

So far, then, for these appearances, as signs of existing pregnancy, but they have also another value as evidences of recent

delivery; in which respect they will again be referred to, when we come to consider that part of our subject; to which the reader is referred.

State of the Umbilicus.—It has been already stated, p. 137, that during the first two months of pregnancy, the umbilicus is rather retracted, and more depressed than usual, in consequence of the descent of the uterus; but when this organ begins to ascend, the umbilicus gradually rises also, so that in the third month, it is restored to its natural state, and in the fourth, it is found less hollow than before conception; in the fifth or sixth, it is nearly on a level with the surrounding integuments, and in the sixth or seventh, completely so; and towards the close of gestation, it projects, in most persons, above the surface. "The navel also," says Denman, "according to the progress of pregnancy, is constantly emerging till it comes to an even surface with the integuments of the abdomen: and to this circumstance much regard is to be paid in cases of doubtful pregnancy."

The production of these changes by the enlarged uterus suggests what we find to be fact, namely, that any solid tumor enlarging the abdomen may also be capable of effecting the elevation of the umbilicus; which latter circumstance, therefore, of itself, can afford us no certain information that the distending agent is a gravid uterus. Yet, I know from experience, that a morbid tumor in the abdomen, of a size and elevation as great as those of the uterus in the seventh month, may coexist with a perfectly depressed umbilicus; a striking instance of this I saw in consultation with Dr. Churchill, and I have thought that the reason probably was, that the tumor was prevented from pressing forward by adhesions, which are so constantly formed between such growths and the parts behind, or around them: how far the fact observed may serve to establish a diagnosis, I cannot venture to pronounce, but I do not know of any single instance, in which the gravid uterus had acquired such a size, without elevating the umbilicus; so that, in any case in which pregnancy is supposed to be advanced to the seventh or eighth month, if we find the umbilicus depressed and the belly flat, it will prove certainly that gestation has not healthily advanced to such a period, although it will not be, as asserted by Dr. Gooch, decisive evidence against the existence of pregnancy; which may be present, but not suffi-

ciently advanced to effect the change, or the uterine development may have been arrested by the death of the foetus. It has been already remarked that in the enlargements of the abdomen from flatulence and fat, the umbilicus is generally found more than usually sunk in; but of course, we will not hazard an opinion until we have collected all the collateral evidence ascertainable in the case.¹

CHAPTER VII.

CHANGES IN THE UTERUS.—STATE OF THE OS AND CERVIX UTERI.
—SIZE OF THE UTERUS.—ITS CONTENTS, SITUATION, AND CONSISTENCE.

HAVING thus carefully investigated the circumstances of the case, as far as we can discover them by the report made to us, or infer them from the presence or absence of the usual symptoms, or sympathetic changes already enumerated, we proceed, in the next place, to an examination of the uterus itself, having for our object to ascertain the following points: the state of the os uteri and cervix; the condition of the organ with regard to development, and the degree to which it may be enlarged; the correspondence of such degree of enlargement with the other circumstances of the case; the cause of its increase, and the nature of its contents: on our successful investigation, or at least careful examination of which points, conjoined with an inspection of the breasts, must be founded our most satisfactory and decisive kind of information. Strong and plausible assertion, or an artful and well-arranged fabrication, may mislead or bias our judgment; disease may simulate, or conceal the condition of pregnancy; but, with proper care, we shall assuredly obtain our least fallible means of judging from the changes in the breasts, discoverable by the eye, and those of the uterus, ascertainable by the hand, either

¹ On the value to be attached to the state of the umbilicus, see Gooch, *op. cit.*, p. 209. Mauriceau, *Malad. des Femmes Grosses*, tom. i. p. 93. Denman, *Introduction*, p. 215, 5th ed., above quoted.

through the parietes of the abdomen or by the vagina; the latter, or internal examination, being often unnecessary, if the two former have been well attended to.

It is not, by any means, here intended to undervalue the evidence afforded by the motions of the limbs of the foetus, or the pulsations of its heart, which, once ascertained, are, of course, decisive; but there is a large class of cases in which no information is obtainable from these sources, but in which the tests just enumerated can be made available.

1. *State of the Os and Cervix Uteri*.—In the virgin and unimpregnated condition of the uterus, its mouth and the lower section of its neck, when examined by the finger introduced into the vagina, can be felt, as it were, projecting into that cavity, from a quarter to half an inch. The part so projecting feels remarkably firm, is slightly tapering, or conical in form, and about as large as the end of a man's thumb; having, in its termination in the vagina, a transverse opening, whose lips or margins feel firm and well defined. This may be so far open as to allow the extremity of the finger to be insinuated to the depth of an eighth or a quarter of an inch, sometimes a little more, sometimes not so much; or it may merely communicate a sensation of a slight depression, almost without a cavity, such as is felt when the tip of the finger is pressed between the lateral cartilages at the extremity of the nose. Sometimes the os uteri differs very considerably from this description, being almost imperceptible, from its diminutive size, and perfectly circular; and it is not very rare to find it opening at once from the upper extremity of the vagina, without any projection of the cervix uteri into that canal, which to the finger seems to taper gradually to a point, and there terminate in the orifice of the womb, the margins of which are very indistinctly felt.¹

The os and cervix of the unimpregnated uterus, in a large proportion of the cases met with in practice, will not correspond to the description above given of them in the virgin state; because,

¹ "Chez quelques femmes," says Dubois, "la portion vaginale du col de l'uterus n'offre aucune saillie; dans ce cas, elle est remplacée par une petite ouverture, qui occupe la partie supérieure de l'espace de cul-de-sac, que forme alors le vagin."—*Traité complet d'Accouchement*, &c., p. 152.

once a woman has borne children, or sometimes even one child, the conditions of the uterus are liable to be altered in several appreciable circumstances.

The whole organ is apt to remain permanently larger than it was originally, and the cervix, partaking of this change, is found broader, less prominent, and less firm in texture, while its shape is sometimes the reverse of that noticed in the virgin or nullipare, being, indeed, somewhat conical, but having the base of the cone downwards instead of above: under the same circumstances, the os is found of greater dimensions, and its opening much more distinctly transverse, admitting more readily the introduction of the end of the finger, and, not unfrequently, having its circumference or margins uneven, perhaps fissured, and giving the sensation of being a little lobulated.

I have had occasion to observe that the abbreviation of the vaginal portion of the cervix, just noticed as one of the changes produced by child-bearing, is sometimes such that it no longer projects into that canal, which then ends in a cul-de-sac, out of which the os uteri opens; and I find that a similar observation has been made by M. Caseaux, who says: "In general, the cervix is shorter, in proportion as the woman has borne a greater number of children: it appears as if each accouchement had removed a portion of it. I saw two women, one of whom had seventeen and the other nineteen children, and in both, the vaginal portion of the cervix was completely effaced;" and Forget notices the fact also (see his *Etude Pratique et Philosophique du Col de la Matrice*, p. 109).

Such alterations in form, and other conditions of these parts, will, as a general rule, be found the more marked, in proportion to the number of children borne by the woman; but to this, many exceptions will be met with, and I have often had occasion to find the uterus in a multipare presenting the conditions of virginity, or, at least, of a nullipare: this is most likely to occur where the woman has borne under-sized children, or where a considerable time has elapsed since the last pregnancy.

Whichever of the states now described be that existing in any case, as soon as conception has taken place, all the conditions begin to alter; the change from the unimpregnated state being distinct, in proportion to the period of gestation, at which the

examination is made. In order to fit the uterus for the reception of the ovum and its support, there is, very soon after impregnation, a greater supply of fluids directed towards it; its vessels, which before crept almost imperceptibly through its dense structure, and, with their calibre completely constricted, become distended and carry blood; the areolar texture is loosened out, and its interstices are infiltrated with a greater quantity of fluid, in consequence of which, the organ becomes, not only altered in texture, but increased in size and weight. At this time, when the finger is applied to its vaginal extremity, the cervix is felt fuller, rounder, and softer, or more springy and elastic under the point of the finger, to which is communicated the sensation of a softer tissue overlaying a firmer;¹ and the same alterations having taken place in the labia of the os uteri, this part communicates a corresponding difference in the sensation received by the finger of the examiner: the margins of the orifice feel tumid, but softer and much less distinct, having lost the well-defined edge which, in the unimpregnated organ, is natural to them, and acquired, in its stead, a peculiar lubricity, in consequence of the increased secretion from the muciparous glandulæ in that situation: while the orifice itself, instead of seeming transverse, *feels* as if it were circular, because it has become more yielding, and admits and surrounds the tip of the finger more easily, and to a greater depth, than in its former state, especially in multiparæ.

These alterations are less appreciable in primiparæ, and more distinct in proportion to the number of children previously borne by the woman; but it must be here observed, that although these changes take place, in a greater or less degree, in all cases, very soon after conception,² it will sometimes require a very practised hand to recognize them satisfactorily, before the third month, when they are in general sufficiently distinct; and from that time, as pregnancy advances, they become still more so; and

¹ "La sensation qu'on perçoit alors, ressemble à celle qu'on obtient lorsqu'on presse avec le doigt sur une table recouverte d'un tapis de drap épais et mou." —Caseaux. M. Forget more appositely compares the sensation obtained to that given to the finger when pressed on the glans penis in erection. *Op. jam. cit.*, p. 89.

² "Le ramollissement de l'orifice est sensible quelques jours après la conception." —Chambon, *Malad. des Femmes*, tom. v. p. 32.

further changes in this part may be appreciated, as affecting its form, structure, and position.

During the greater part of the first three months, besides the alteration already mentioned, the os uteri is felt lower¹ in the vagina, and not unfrequently projecting a little forwards, the cervix having, for the present, become elongated, and the posterior lip of the os having descended to a level with the anterior; but when the uterus has left the cavity of the pelvis, and risen into the abdomen, as it does by the fifth month at farthest, sometimes a month earlier, its fundus leans forwards, and, in consequence, the os uteri is directed backwards. Its margins are now very soft and relaxed, and we distinguish, very generally, within the circle of its orifice, the muciparous glandulæ slightly projecting, and feeling like little elastic smooth vesicles rolling under the point of the finger. This latter condition of the os uteri may sometimes be recognized as early as the beginning of the fourth month; but during the fifth it becomes particularly well marked in general, and affords, in my opinion, a very decisive criterion of the existence of pregnancy.

The subjoined sketch represents this change, well marked, in the seventh month.²

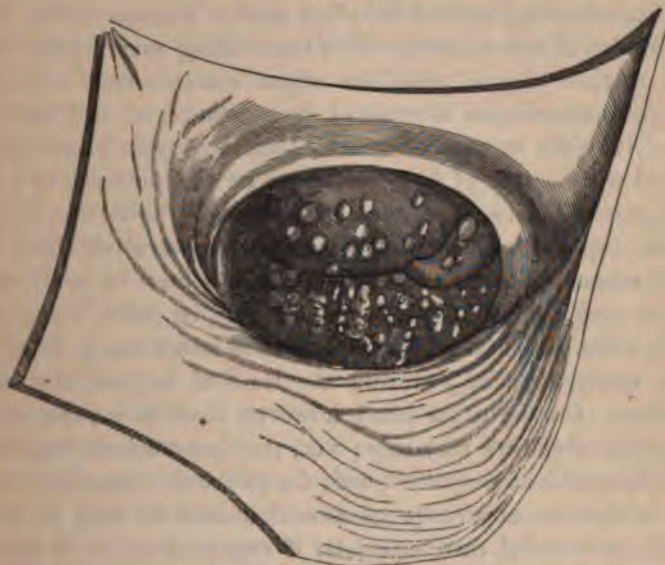
We can now also introduce the tip of the finger with greater ease into the cavity of the cervix, owing to the very yielding condition of the labia of the os uteri. From this period, in consequence of the rapid development of the uterus, and the shortening of the cervix, the os uteri rises in the pelvis, and is, of course, removed farther and farther from the external parts, while, at the same time, the anterior projection of the uterus increasing, its mouth is, in the same degree, directed backwards, so that, if we examine in the eighth, or ninth month, we reach it with difficulty, and must expect to find it in the direction of the upper part of the sacrum; while the head of the child presents

¹ "Uterius in vaginam orificium descendit, ita ut secundo, tertioque a conceptione mensibus, duabus saltem digiti phalangibus in vaginam demissis attingi possit, cum ante impregnationem integer digitus fuerit demittendus."—Røderer, *Elem. Art. Obs.*, pp. 15, 16, § 56. Schmitt, *Op. jam. cit.*, p. 41.

² See also Noortwyk, *Uteri Humani gravidi Anatome*, plate 1, and page 7, § 4, n. 4. W. Hunter's Plate xxvii. fig. 1, and Røderer, *Icones Uteri Hum. grav.*, tab. vii. fig. 1.

itself towards the symphysis pubis, and is plainly felt distending, and pushing downwards, the anterior and inferior segment of the cervix.

Fig. 1.



Still later, when gestation is drawing to a close, the orifice will often be hardly distinguishable, and when felt, gives only the impression of an opening in a nearly flat surface, without any elevated margin, or at most very little, and feeling as a mere rugous opening in the mucous membrane of the upper part of the vagina. The difficulty of examining it is now greatly increased; first, by its height and distance from the external parts, and secondly, by the intervention of the tumor formed by the head lying in front of it; and when reached, an additional obstacle to its detection is sometimes found in the interposition of a portion of the anterior lip of the orifice, which, being longer than the posterior, continues to be somewhat prominent, and to lie in some measure across the opening; an effect to which the anterior obliquity of the uterus contributes.

But we must recollect, when we come to form an opinion from the existence of such changes in the os uteri, that there are other conditions of the organ, besides pregnancy, by which they may be

produced, so as to assume, almost exactly, the characters of those that accompany the earlier periods of gestation. Thus, for instance, the near approach of menstruation, and the accompanying irritation of the uterus, may (and we have had repeated proofs from examination that it does) effect such a change in the form and texture of the os uteri.¹ The same thing may happen in a more marked degree, when the organ becomes from any cause enlarged, either by an increase of its substance, or, still more remarkably, when its cavity becomes distended by an accumulation of fluid within it, as of blood or water, or the presence of a diseased growth, such as a polypus, or hydatids.² Moreover, in some women, especially those who have borne several children, and are of relaxed habit, the condition of the os uteri is, at all times, such as may but too easily impose on us, its labia being soft, tumid, undefined, and so much apart as to admit the point of the finger easily, especially during the time of, or just after menstruation. On the other hand, however, there is one fact on the subject on which we may rely; viz., that inasmuch as pregnancy must always be accompanied with the physical changes of structure in the uterus already mentioned, should we find, in a suspected, or doubtful case, especially if supposed to be of four or five months' duration, the os uteri retaining distinctly the characters which have been described as belonging to it in its unimpregnated state, that is, its transverse orifice with well defined and firm margins, we may conclude, with certainty, that the woman is not with child.

Having just now, as well as on other occasions, made allusions to the close similarity observable in the constitutional symptoms, and in the physical changes which take place in the uterus and ovaries, at the menstrual periods, and after conception, I think it

¹ This quite coincides with Lisfranc's remarks on the condition of the cervix at the time of menstruation.—"Il donne alors la même sensation qu'à deux mois de grossesse" (*Maladies de l'Uterus*, p. 17)—and is moreover interesting as showing in how short a time increased determination towards the organ may produce in it a change of texture appreciable by examination. (See quotation from Chambon, p. 173, note.)

² In introducing hydatids here, I do not mean to be understood as considering them distinct from pregnancy, from which, I believe, they always arise; but as distinct from the natural condition of that state, and from the presence of a fetus.

necessary to advert to them somewhat more particularly here; lest we should fall into the error of inferring the existence of pregnancy, or the previous occurrence of conception, from conditions resulting simply from the natural excitement of menstruation, manifested, perhaps, in a more than ordinary degree. Thus, experience teaches us that, at the menstrual period, especially at its commencement, the abdomen is fuller, the whole uterine system becomes more vascular, the uterus is increased in size and weight, and descends a little in the vagina; it is altered in form and texture, becoming rounder in shape, and softer in consistence; its mouth is relaxed, and yields more readily to the pressure of the point of the finger; the cervical canal partakes in this relaxation, and has its muciparous follicles more developed, and in a state of more active secretion; the mucous membrane of the cavity of the organ becomes charged with blood, efflorescent, thicker, softer, with well-marked utricular glands; and, in short, an imperfect decidua is formed, and thrown off, during the course of the process, generally towards the end; how remarkably, in dysmenorrhœa; sympathies engaging the mammæ and stomach are often experienced; the ovaries swell, some of the Graafian vesicles enlarge, sometimes burst and discharge an ovum which perishes, but leaves behind a rent on the surface, and in some instances, but not in all, an imperfect corpus luteum is found in the ovary; and should the woman happen to die a few days afterwards, a serious and most mischievous error might be committed by a careless, or incompetent observer attributing to conception appearances resulting only from menstruation.

While I write these observations, there are lying before me a uterus and ovaries of an unmarried woman, sent me by Professor Geoghegan, which forcibly illustrate the truth of these observations in every particular; and the same facts will be found exemplified on a larger scale by the perusal of thirteen cases, not long since published by Professor Bischoff,¹ of women who had died during, or soon after menstruation.

I believe we may assume as a general law that in natural healthy menstruation, efflorescence of the uterine mucous mem-

¹ *Zeitschrift für Rat. Med.*, band iv. heft 1; and *Brit. and For. Med.-Chir. Rev.*, April, 1854, p. 561.

brane, in a greater or less degree, is a normal occurrence; but, although I must acknowledge that my opportunities of examination have not been sufficiently numerous to justify me in giving a positive opinion, still, from what I have seen, my present impression is, that there exists this marked difference between the decidua of ordinary healthy menstruation, and that of pregnancy, independently of their different degrees of organization; that, whereas the latter is not merely a secretion from the uterine mucous membrane, but the membrane itself in a state of hypertrophy, and traversed by numerous bloodvessels, and consequently not artificially separable from the subjacent tissue except by cutting, the decidua of healthy menstruation is, to a certain extent, so separable, a portion of it, at least, appearing to be only a secretion; or, at most, a thin desquamation of the surface of the membrane, and destitute of bloodvessels, being, according to Pouchet, composed of albumen, or coagulable lymph; the subjacent uterine tissue, however, undergoes in a modified degree the same changes as in early pregnancy.

This formation of decidua at the menstrual period, seems happily in accordance with the greater aptitude for conception which we know to exist at that time; in order that, should impregnation take place, the ovum may have already prepared within the uterus, a nidus suited for its support; and it seems very reasonable to believe, with Bischoff, that the want or defective progress of this preparatory development of the uterus is, in all probability, a frequent cause of sterility, when the other appearances of menstruation, and all the other conditions, are present.

The indications to be ascertained from the state of the cervix, are amongst the most important and the least liable to error of any available to us, as they enable us not only to form an opinion as to the existence of pregnancy, but to determine, in most instances with considerable accuracy, the period of gestation. During the first four months, the changes of texture, by which the cervix is rendered fuller, rounder, softer, and more elastic when pressed by the finger, are all that we can expect to recognize as indicative of the altered condition of the part; for, as yet, the particular change of form, and the shortening of the part, have not taken place. But, in the fifth month, when the finger

is passed along the cervix towards its upper end, it feels swelled out there, especially in front; and, in fact, its sides have begun to diverge from each other, and are becoming a part of the body of the uterus, which now feels nearer to us, so as to be more easily examined by the finger, while, at the same time, the cylindrical part of the cervix feels somewhat diminished in length, and, owing to the increased softness and yielding condition of the uterine texture, the finger passes more readily into the canal of the cervix. In the sixth month, these alterations are still more distinct, and the vaginal portion of the cervix is decidedly abbreviated, owing to a further portion of its upper end having been dilated, and taken up, as it were, to form a part of the distended cavity containing the child; and this obliteration of the cervix from above downwards continuing to be gradually effected, while at the same time there takes place a progressive retraction of the portion of the cervix below its junction with the vagina, we find, at length, if we examine towards the close of gestation, that the projecting cervix is no longer to be felt; but, in its place, there is detected, at the upper extremity of the vagina, a globular tumor, which is the enlarged uterus, with the head of the child to be distinctly recognized through its parietes. Such is the natural and usual order of these changes, but there is a particular deviation therefrom occasionally met with, which is deserving of notice; it sometimes happens that the portion of the cervix below the attachment of the vagina and more immediately around the os uteri yields before the part above it, or middle portion, the texture of which is generally exceedingly close and resisting:¹ the consequence of this is, that the os uteri becomes relaxed and expanded sometimes several weeks before the organ is prepared to expel its contents; a condition which has often given rise to an erroneous belief that the woman was either actually in labor, or on the point of being so, long before that process had really begun.

It should be remembered that there are certain pathological conditions of the uterus, in which the dilated state of the vaginal portion of the cervix very closely resembles that observable in

¹ See Desormeaux, *Dict. de Méd.*, tom. x. p. 377. Rœderer, *Elem. Art. Obstet.*, p. 17, § 60.

pregnancy advanced to the fifth or sixth month; as in certain forms of relaxation of the uterine tissue, not unfrequently accompanied by simple ulceration of the mucous membrane of the os uteri, or of that lining the cervix, in that affection which has been called uterine catarrh.

It is usual to state the abbreviation of the cervix by exact proportional parts; and thus, it is said, that during the sixth month, it loses one quarter, that in the seventh, it is only one half its original length, that in the eighth, only one quarter remains, which in the ninth month is reduced to an eighth, which is obliterated before the end of that month. Now all this may be true in very many cases, and I believe it is so, but we can derive from it little or no practical benefit; such precision is only available with a uterus in a preparation, or on a dissecting table, but not in the examination of a living woman, where, except we had a previous knowledge of the length of the part before impregnation, we could not tell the exact proportion of it which has been obliterated; and nothing is more certain than that there is great variety in this respect in different individuals, some women having the cervix double as long as others; owing to which, and also to the fact that this part, though of the ordinary length and healthy, yields much more slowly in some than in others, it happens that more of it will be found undilated in one woman at the eighth month, than in another at the sixth:¹ this will be, *cæteris paribus*, most likely to happen in first pregnancies: and hence it is that we not unfrequently find a small portion of the cervix unobliterated and projecting at the commencement of labor; while at other times the whole cervix is obliterated, and the os uteri considerably opened one, two, or three weeks before delivery.

Hence, this abbreviation cannot always be relied on alone, as a sufficient evidence, although, in general, a correct indication, of the period to which pregnancy has advanced, in order to determine which, we should assist our judgment, 1st, by a general

¹ "The examination of many," says Dr. Gooch, "has taught me, that the neck of the uterus is as much altered in some women at the fourth month, as in others at the sixth, especially in those who have had several children, in whom the neck yields more readily than in first pregnancies."—*Diseases of Females*, p. 214. See also Smellie, vol. i. p. 185.

review of all the rational, or other signs which have been observed; and 2dly, by ascertaining carefully, the height to which the uterus has risen in the abdomen.¹

2. *Size, Situation and Consistence of the Uterus.*—When conception has taken place, the uterus, in consequence of the new action

¹ The annexed diagrams will afford a sufficiently accurate general idea of the changes which take place in the form and length of the cervix, and in its relation to the vagina, at different periods of gestation.

Fig. 2.



Represents the cervix uteri projecting into the vagina within the first three months, while its form and length are but little, if at all, affected.

Fig. 3.



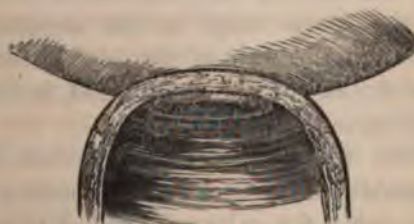
Shows it about the sixth month, when it is perceptibly changed in both respects.

Fig. 4.



Shows it in the seventh or eighth month, when it is much shortened, and the globular tumor of the uterus is felt lying at the top of the vagina.

Fig. 5.



Represents the condition of the cervix in the ninth month, when it is almost entirely obliterated, and there is no longer any projection of it into the vagina.

already described, almost immediately begins to increase in size, generally in every part, but especially at the fundus. Here the cavity begins to increase its capacity, to enable it to receive and accommodate the ovum; which being accomplished, the upper part of the organ continues to increase in size, in proportion to the growth of its contents. The fundus is first developed, then the body, and lastly, the cervix; the latter part not being affected by the process of expansion until about the sixth month, or end of the fifth. During the earlier months, therefore, the finger introduced per vaginam, cannot reach sufficiently far to arrive at and detect the development which has taken place in the upper part of the uterus; and as the increase of size in the organ is not as yet such as to prevent its being accommodated within the pelvis, it cannot be detected by examining through the parietes of the abdomen; wherefore, during this period, which extends through about the first three months, the degree of development of the organ is difficult to ascertain, but becomes gradually more easy of detection as pregnancy proceeds, and the uterus enlarges.

Cases do occasionally present themselves of pregnancy not advanced beyond the middle of the third month, in which the uterus lying lower than usual, and with its fundus somewhat anteverted, the finger will detect the enlarged body of the organ lying against the bladder; and under these circumstances I have, in some instances, found it so firm, as to give the idea of induration from a morbid cause, though none such existed; and in other instances, at the same period, pressure by the hand will carry in the abdominal integuments sufficiently to enable us to feel the expanded fundus; but these must be regarded only as exceptional cases.

In general, in the fourth, and sometimes in the third month, the fundus of the uterus may be felt, especially in a thin person, above the anterior wall of the pelvis, which it overtops considerably, by the end of that month, and inclines to one or other side, most frequently to the right.

During the fifth, it rises to half way between the symphysis pubis and the umbilicus; and if an examination be made per vaginam, we can detect the enlarged body of the uterus, which we encounter when we attempt to pass the finger between the anterior part of the cervix and the inside of the symphysis pubis,

a situation in which, when a woman is not pregnant, and even during the earlier periods of pregnancy, we are not able to feel anything. At this period also, we may, at the same moment, feel the foetus by ballottement, as described in the next chapter. In the sixth month, the uterus rises as high as the umbilicus, which is now sensibly affected, and raised nearly to a level with the surrounding integuments. In the seventh month, the fundus uteri may be felt, half way between the umbilicus and the end of the sternum; and if an examination be made per vaginam, the finger readily detects the globular tumor of the uterus resting on the symphysis pubis, and within it, the child's head; but the os uteri is now reached with greater difficulty, both because it is raised absolutely higher in the pelvis, and also because it is removed farther from the external parts, by being projected more towards the upper part of the sacrum.

By the end of the eighth month, the uterus has risen as high as the ensiform cartilage, and fills the whole abdomen, which is now very prominent and tense, and the umbilicus is, in general, not merely on a level with the integuments, but projects beyond them.

In the ninth month, the uterus continues to enlarge, but the degree of its increase is not very observable by an increased elevation of its fundus, which, on the contrary, very generally falls lower towards the close of the month; so that sometimes for a week, or even two, before labor, the woman will appear and feel smaller than before. If, at this period, we examine internally, the os uteri will, in most cases, be touched with great difficulty, from its situation towards the upper and back part of the pelvis; there are in general no remains of the cervix, and the margins of the os uteri are felt thin, soft, and so relaxed, that the orifice would receive with perfect ease the end of one's thumb, and within its circle, we may feel the membranes.

In a case of pregnancy which I had lately occasion to examine frequently, I was very much struck with the different heights in the abdomen, at which the uterus was felt on successive days, being one day much higher or lower than on another; the child was born alive and well.

M. Piorry has laid great stress on the value of abdominal percussion as a means of detecting the development of the uterus,

even before it has risen above the pubes; but he altogether exaggerates the value of such mode of examination, because, however accurately we might be able to determine the amount and limits of the dulness thus ascertainable, it would be impossible to distinguish that produced by pregnancy from that arising from enlargement of the organ from morbid causes; and in this country, few women would be found willing to submit to this examination, conducted in the way proposed by M. Piorry.

While the uterus remains within the cavity of the pelvis, if its fundus can be felt through the integuments, it is found lying behind the symphysis pubis, and occupying a central situation; but when the organ has left the pelvic cavity, either partially or completely, and an examination is made in the course of the fourth and fifth months, the uterine tumor occupies a lateral situation in the abdomen, and most frequently on the right side. This lateral inclination, especially when the female is lying supine, is the necessary consequence of the projection of the sacro-vertebral promontory into the hollow, at either side of which, the organ is received; and its more frequent direction to the right side¹ rather than to the left, is ascribed to the latter situation affording less space, on account of the presence there of the sigmoid flexure of the colon and the rectum. As the organ grows larger, it requires more space for its accommodation, and can no longer be lodged in the lateral hollow, so that as pregnancy advances, it necessarily assumes a position more and more central. The lateral situation of the uterine tumor in the middle period of pregnancy has sometimes given rise to the suspicion that it was the product of disease, as of the ovary, the centre of the supra-pubic region being found unoccupied, while the iliac was distended; a case in which this occurred has been already detailed.²

The uterus, within the first four months, has the feel of a soft though pretty firm fleshy tumor, not sensitive when pressed, of a uniform smooth surface, and of such a size as would be without difficulty grasped in the hollow of the hand; after this period,

¹ See Schmitt, *Critical Introduction*, pp. 29, 40; Desormeaux, *Dict. de Méd.*, tom. x. p. 378.

² In Chap. V. p. 119; see also Gooch, case iv. p. 221; and Schmitt's tenth case, second division.

that is, from the fifth month, it loses somewhat of its firmness and distinct feel, owing to its greater expansion, and the consequent lengthening out of its fibres, which, continuing to increase as pregnancy advances towards its termination, the circumscribed outline of the organ becomes less and less distinguishable; though generally to be detected by making pressure with one hand, while we examine with the other, in doing which, we may also ascertain some degree of obscure fluctuation; but in the same proportion as the parietes of the organ become indistinct, its solid contents are more easily felt, and even separate limbs may be recognized and traced; the firmness of the tumor, as well as the degree of fluctuation which it affords, will very much depend on the size it has acquired, or the natural firmness or suppleness of its structure, and on the quantity of liquor amnii. Owing to the variation in these causes, a corresponding degree of difference will be recognized in its consistence in different instances; so that while in some persons it is so soft and yielding as hardly to be felt, in others, it presents a degree of solidity amounting to absolute hardness,¹ though still healthy, and retaining its round or oval form, and its uniform smooth surface.

I very recently attended a lady, in whom the uterus, for more than a month before her labor, felt almost as firm as a fibrous tumor, but without tenderness. She was delivered of a child some time dead, and as far as I could discover, there was not present an ounce of liquor amnii.

When pregnancy happens to be complicated with something anomalous in the state of the uterine contents, independently of any morbid condition of the organ itself, it may present characters very different from those above described; as in the case of M. S., already related,² in which the uterus, at the fifth month, was of scirrhus hardness, nodulated on its surface, and exquisitely painful; there were also profuse sanguineous discharges during the whole time of pregnancy, though, as the event proved, the organ was healthy, but contained matters not belonging to the then existing ovum.

¹ See Schmitt's ninth and eleventh cases, second division, the former especially being of unusual interest.

² Chap. IV. p. 106.

In another case, more recently under the writer's care, where the ovum had become converted into hydatids, with frequent bloody discharges, the uterine tumor was so hard, that it had previously been considered as a scirrhus enlargement of the ovary, of which it had all the hardness and knotty feel, but it contained nothing except hydatids, around which were large flakes of coagulated blood and decidua, the uterus itself being unaffected with disease. Morgagni, also, has recorded a case, in which the gravid uterus was irregular in form, and painful when pressed on, with irregular discharges; and here, also, there was an anomalous substance in the uterus along with the ovum.¹ In the three cases, the existence of pregnancy was, almost to the last, exceedingly doubtful, and in the three, also, the uterine contents were expelled in the fifth month. Whether these conditions of irregularity of form, and painful sensibility, with profuse and repeated discharges, accompany gestation complicated with such anomalous additions to the uterine contents, with sufficient constancy to be received as diagnostic signs of the presence of such adventitious formations, is a question to which I am not prepared to give a decided answer, but it appears that Morgagni adopted the affirmative opinion; for in the case examined by him, he said, in consultation, that he "feared lest there should be a false conception besides the foetus."² All I will venture to affirm is, that the peculiar symptoms alluded to have been very frequently found where such anomalous or monstrous productions have existed in utero, but whether as cause, or effect, we must be, in most cases, without means of determining: in some, a morbid condition of the uterus was fully ascertained, both by the writer and others.³ In Mr. Fenner's case, "the mother was affected with an enlarged and diseased state of the posterior part of the fundus uteri, where the placenta of the monstrosity had been attached." Obviously nothing can be more consistent with the general laws of pathology and physiology, than that the morbid condition of the uterus, which would induce such symptoms as those enumerated, should also alter the quality of the nutrition furnished to the new organization, so as

¹ Epist. xlviii. art. 9.

² Ibid.

³ Case by Dr. Hodgkin, Guy's Hospital Reports, No. 2, p. 218; and another by Mr. Fenner, in same work, p. 220.

to induce malformation, or the production of some unnatural adventitious structure; while, on the other hand, it seems reasonable to believe that substances accidentally remaining in the uterus after abortion or delivery, and continuing there after a new conception, would, by their presence, alter the uniform shape of the organ, and produce considerable irritation, with sanguineous discharges. Schmitt says that molar pregnancy has peculiar signs by which it may be distinguished, if not with certainty, at least with probability, but he does not say what these signs are. Molar gestation will be again noticed, in the chapter on substances expelled from the uterus.

I shall now proceed to describe the several modes of examination usually adopted, and the best method of conducting them, at the same time noticing the different degrees of distinctness with which the changes in the uterus may be recognized in different individuals, or in the same person at different times.

CHAPTER VIII.

OF THE DIFFERENT MODES OF EXAMINATION, AND THE METHOD OF CONDUCTING THEM.—SUMMARY.

THE modes of examination by which we seek to ascertain the sensible signs of pregnancy depend upon the exercise of the senses of touch, hearing, and sight. By the hand we institute the external examination through the abdominal parietes, the internal examination by the vagina or rectum, and perform the manœuvre of ballottement, or percussion. By the ear, we recognize certain sounds resulting from the state of the circulation in the gravid uterus, and in the vessels of the funis, the action of the foetal heart, and the sounds produced by the motions of the foetal limbs. By the eye, we judge of the volume of the abdomen enlarged by the uterus, of the state of the breasts and the characters of the areola, and of certain colored marks on the abdominal integuments, which subjects have been already fully considered in their proper places: another mode of judging from

an object of sight, namely, the dusky hue of the mucous membrane of the vagina, has been proposed by Kluge and Jacquemin, which shall be noticed presently.

Whichever form of manual examination we adopt, it should be made, if possible, before the patient has risen from her bed in the morning, and before breakfast, means having been previously adopted to have the bowels and bladder completely emptied, as distension of the latter organ might entirely defeat the examination or impose on us.¹ If the patient has had the bowels distended with flatus, it should be, if possible, removed. When our object is to examine the uterus through the abdominal parietes, she should be placed lying on her back, with the head and shoulders moderately elevated, and the knees drawn up until the thighs are brought to nearly a right angle with the trunk, that the abdominal muscles may be completely relaxed. One hand, or both, should then be spread over the abdomen; in a case of early pregnancy one hand will answer best, which should be laid across between the umbilicus and pubes, and allowed to remain quiet for a short time before we begin to make pressure, while, at the same time, we engage the patient in conversation, and gradually press the integuments inwards and downwards towards the cavity of the pelvis, which will be most effectually done during a complete expiration.

It should be here recollected, that although the grand object in making this external examination is to detect the developed uterus, there are other circumstances which should never escape our attention; as, for instance, the form, volume, and degree of firmness of the supra-pubic region of the abdomen, which may materially influence our opinion, when we cannot distinctly feel the uterine tumor.

At more advanced periods of gestation, we may find it desirable to use both hands, placing them along the sides of, or across the abdomen, and pressing from the one towards the other, either simultaneously or alternately.

In some women, there is a natural stiffness and tension of the muscles of the abdomen, which is a great obstacle to an examina-

¹ As is supposed to have happened in the case of Joanna Southcott, see pp. 127, 140.

tion; and this they can produce or increase at pleasure if they wish to baffle us in our investigation. In this, however, we may defeat them by engaging them at the instant in conversation on some subject connected with their case, which will be likely to set them talking. In other cases a similar difficulty will arise from inflation of the intestines, or their distension by an accumulation of feces; sometimes the abdominal tenderness already noticed¹ is so considerable as to prevent any sufficient examination, without causing great uneasiness and pain; under such circumstances we must postpone the trial and adopt measures to diminish the untoward sensibility of the abdomen. A still more insuperable bar may be found in a general condition of *embonpoint*, when the omentum and abdominal integuments are so loaded and thickened with fat, that we can no more feel anything through them than if we had a folded blanket between our hand and the patient's abdomen. This is so remarkable in some fat women, that I have found it impossible, immediately after delivery, to ascertain by external examination the degree of uterine contraction, although there were other satisfactory proofs of its perfection. We should not forget that this is a state of the abdomen very apt to occur at the turn of life, when from the cessation of the catamenia, women very often fancy, or affect to think themselves with child. On the other hand, the examination will be most satisfactory in women of a spare habit, and who have the abdominal parietes relaxed.

A very peculiar condition has been already briefly noticed, pp. 62, 140, in which there is simulation of an abdominal tumor not really existing, but wonderfully resembling reality, in which the truth can only be arrived at by placing the patient fully under the influence of chloroform, when the abdomen flattens down, and the tumor disappears.

When we are to examine internally, the same precautions ought to be observed as in the other case, but the position of the female is different. She may be examined either standing upright, which is not in general a desirable mode of proceeding, though it may occasionally become so; as, when the uterus lies high, and we seek to bring it more perfectly within reach than

¹ Chap. VI. p. 137. See also Schmitt's twenty-fifth and thirty-second cases, first division.

could be done with the patient in the more usual position, lying on the side, with the knees drawn up, as already described, and the limbs kept slightly apart by a pillow; the index finger is then to be introduced, having been previously immersed in oil, or covered with any simple unirritating unctuous substance, such as lard, or spermaceti ointment, a bit of which may be with advantage carried into the vagina before the point of the finger, which is then to be slowly advanced up to the os uteri, and our attention directed to the examination of those changes already described: with a woman who has borne children, this proceeding, gently managed, is in general one of much facility, and unaccompanied with pain; but with women pregnant for the first time, it may be a source of uneasiness, and requires a proportional degree of caution and gentleness; under such circumstances, the orifice of the vagina is sometimes found so contracted, or so painfully sensitive, as to embarrass us extremely, or even altogether prevent the possibility of making a satisfactory examination, however desirable.¹ I am in the habit of attending a lady who miscarried once in the third month, a second time at the end of the fifth, and subsequently gave birth to a child at the full time, but had, notwithstanding, such extreme irritability of the sphincter of the vagina, that even when in labor, the ordinary examination with one finger was a source of great pain to her, and under other circumstances, caused her absolute torture.

Where the case happens to be such as renders an examination indispensably necessary, this irritable state of the part may be abated by appropriate measures, or the difficulty attending its presence may be surmounted by the use of chloroform, either inhaled, or the vapor applied locally, as proposed by Dr. Hardy;² but I would here wish to caution against using applications of belladonna for such a purpose, because its introduction into the vagina, even in small quantities, has been soon followed by the symptoms of poisoning by that drug. It is sometimes very dif-

¹ The late Dr. Douglas, of this city, who was a man of great practical experience, and of keen observation, as proved by his correction of Denman's theory of the spontaneous evolution, told me that he had often observed this painful condition of the part in persons addicted to drinking; in the instances which fell under my observation, I had no reason to think that any such habit existed.

² Dublin Med. Journ., Nov., 1853, p. 306.

difficult to reach the os uteri from the external parts, owing either to its being really situated very high in the pelvis, or to the bulk of the nates and labia in a fat woman preventing the close access of the hand; under such circumstances, it may be advantageous to examine the patient in the standing posture, or by conjoining the middle finger with the index, we shall be enabled to reach nearly an inch further, if the state of the vagina will permit of our doing so without giving too much pain. Lisfranc, in his work on the Diseases of the Uterus, p. 40, recommends another mode of accomplishing the same object, to which it would be very difficult to induce females in this country to submit.

The examination per anum is a mode of determining the state of the uterus, which, although very useful in the investigation of certain of its diseases, is seldom required where pregnancy only is in question, and for such a purpose, should never be resorted to, except as a matter of necessity, when we cannot, by other means, obtain the information requisite for the benefit of the patient. It may thus become necessary, 1stly, when for any particular reason it is thought desirable to ascertain whether the uterus is enlarged within the first two months of supposed pregnancy; 2dly, when tumors attached to, or pressing on, the uterus, or malposition of the organ itself, render the ordinary examination unsatisfactory; 3dly, when there exists morbid sensibility of the vagina, or that passage happens to be excessively contracted, or perhaps closed, either by accidental adhesions, or by an unbroken hymen; 4thly, when there exists a suspicion of disease, or of malformation. In making this examination, we should use the hand of the same side as that on which the patient is lying, by which the pulp of the finger is most readily brought into contact with the back of the uterus, more of which can thus be felt than by any other means; but it should be recollected, that when the uterus is thus examined by a person not accustomed to it, the organ appears much larger than it really is.

It has been already stated that, during the first three months, we may find it very difficult to judge accurately of the altered size of the uterus, and that the changes effected in its neck and orifice may remain obscure for nearly the same length of time; for these reasons it will generally be better not to propose, but

rather to decline and abstain from making a vaginal examination at this period, except when the solution of the question is peculiarly sought for; because it is commonly much disliked, and perhaps only submitted to, from an idea that it will enable us to pronounce with absolute certainty, on the state of the case; and if we are not able to do so, the patient is disappointed, and we suffer in her estimation: but in the course of the fourth month, these changes have become distinct, and may be ascertained both externally, and also per vaginam; and it may be here added, that in a case of doubt, we may make these two modes of examination mutually confirmative of each other, by applying the finger of one hand to the os, or cervix uteri, and pushing that part upwards, and then with the other hand gently pressing down the tumor felt in the abdomen. If we thus feel its descent upon the finger in the vagina, it affords almost certain proof that the tumor is the uterus in a state of enlargement. But we must again recollect, that even a certainty of this will not be sufficient to assure us of the existence of pregnancy; because the enlargement may arise from other causes than the presence of a foetus, such as hydatids, polypus, fibrous tumor, accumulated menses within the uterus, or scirrhus thickening of its substance. In the case of polypus, fibrous tumor, or scirrhus, the great solidity of the organ would at once undeceive us; but in other circumstances, we might only succeed in ascertaining that the cavity of the organ was increased in capacity without being able to determine the exact cause of its enlargement. At the same time, the presence of several of the symptoms of pregnancy might afford a very strong moral conviction of the existence of that condition; while, on the other hand, we may discover such a want of correspondence between the state of the uterus and the other symptoms apparently indicating a certain period of pregnancy, as would be sufficient to decide our opinion on the negative side of the question.

I have already spoken of the mode of examining externally to discover the presence of a foetus in utero, and alluded to another form of examination, to which we ought to resort for this purpose, usually known by its French designation of *ballotement*, for which, however, the English term *repercussion* may be conveniently substituted.

Ballottement, or Repercussion.—This may be performed in three different ways. First, with the patient lying supine, or on her side, by placing one hand open on the side of the abdomen, and making pressure towards the opposite, while at the same time, we impress the uterus in the contrary direction, with the ends of the fingers of the other hand; by which means the foetus may be either thrown into contact with the hand which is kept spread on the abdomen, or if the examination be made with the patient lying on her side, the foetus may be felt to drop on the points of the fingers, which should, in this case, be kept in close contact with the integuments, after the jerking motion has been made with them. Sometimes the voluntary or active motions of the child are thus excited and recognized. This mode has the great advantage of not requiring any vaginal examination, and will also occasionally enable us to succeed in our object, when we could not do so by the internal method, owing to difficulties which will be specified presently, but it is liable to the objection of not being applicable at so early a period of pregnancy as the latter. A second external method, for the suggestion of which I believe we are indebted to Dr. Heming, of London, appears entitled to the same commendation, and liable to the same objection as the first: it consists in placing the woman either on the side, with the hips raised, or, as I have myself tried it, on her knees, and with the shoulders depressed, so that the foetus may be caused to gravitate towards the fundus uteri, which is also brought into more complete contact with the abdominal parietes; the jerking pressure of the fingers is then to be made above the pubes, and the same result sought for as in the other methods. Dr. H. has suggested for this the name of *hypogastric repercussion*: my trials of it have not been attended with much success.

The third, or internal method is thus to be instituted. The patient may be examined in the upright position, or placed lying with the shoulders much raised; the latter position is generally to be preferred, as being more convenient, and less revolting to the feelings of the patient; besides which, it allows us to examine at the same time the supra-pubic region with the other hand, which cannot be satisfactorily done when the woman is standing upright; whichever position is adopted, one or two fingers are to be introduced into the vagina, and carried upwards until their

points are applied to the anterior portion of the cervix uteri, as high up on that part as they can be conveniently made to reach, without using too much force; or, still better, on the body of the uterus, if within reach, and they must be carefully kept in constant contact with the spot to which they have been applied. The other hand of the examiner is to be placed on the abdomen, over the uterine tumor, which should be pressed downwards towards the cavity of the pelvis; instantly on our doing this, the fingers which have been kept applied to the cervix should be impressed against it, with a quick and slightly jerking motion, directed upwards and forwards, when something will be felt to have bounded away from the fingers, upon which it will, in the course of three or four seconds, be felt to drop again with a gentle pat, and this proceeding may sometimes be repeated as often as we please. The sensation thus obtainable may be imitated, by putting a marble into a bladder of water, and then acting as just described.

Should this be distinctly felt, it is proof positive of a foetus in utero, there being no other condition, or any disease of the organ, in which a solid body can be felt in this way floating in its cavity; the foetus being, under the existing circumstances, in a condition not unlike that of the figures which we see in bottles at the opticians' shops, which can be made to dance up and down, by striking the side of the bottle, or making pressure on its cover;¹ and it possesses this great advantage over many other modes of investigation, that it is equally applicable to the dead, as to the living foetus. But we must be prepared for occasional disappointment in this test, as in others; inasmuch as the most carefully conducted examinations of this kind have failed of success, when there was really a foetus in the womb of sufficient bulk to be thus felt, as I have myself, many a time, experienced. This difficulty may arise, in some cases, from the foetus being unusually small, or from the cervix being unusually long; and, in some instances, I have been satisfied it arose from the uterus lying too much beyond the reach of the finger at the time of the examination, the

¹ Roederer says: "Quas quidem ascensus, descensusque vicissitudines, repetere exploratori licet, simili propemodum saltatu quo homuncione cartesiano ludimus."—*Elem. Art. Obstet.*, p. 27, § 89.

success of which may also be defeated by the presence of the placenta low in the cervix, or over the os uteri, and of course interposed between the finger and the child, which we are thus prevented from feeling;¹ in such a case, the external modes might be successful.

The time at which we may resort to this examination with the best prospect of success, is generally said to be from the fourth to the sixth month. My experience leads me to say, that although we may occasionally succeed in performing repercuSSION during the fourth month, it is not, in general, likely to be decidedly satisfactory until that month is completed; but from that till the end of the sixth, it will be found most available, and often completely decisive.² In the earlier periods of pregnancy, the foetus is too light to be felt, and in the more advanced, its presence is ascertainable by other means, and besides, it is then too large, and too much confined to be made to float, or move about thus freely.

It is desirable that the bladder and rectum should be quite empty when we make this examination, that the uterus may have as much space as possible for its descent into the pelvis, and so be brought more within reach of the examiner's finger. We must be careful not to mistake the movement of the uterus for that of the foetus, an error into which we shall be particularly liable to fall if we remove the fingers from their contact with the cervix, while making the examination. Depaul, after stating his high opinion of the value of ballottement, which, he says, once perceived by a practised hand, can leave no doubt, relates two cases to show that accidental conditions are occasionally met with so closely simulating this sign, as to lead to the conclusion that pregnancy exists.

In both his cases, the fundus of the uterus was abnormally inclined forwards, was very movable, and when jerked upwards by the point of the finger, bounded away, and then dropped again, communicating exactly the sensation that would be pro-

¹ As in one of Dr. Gooch's cases: see *Account of Diseases of Females*, pp. 223, 224.

² Gardien specifies four months and a half; Gooch from the fifth to the seventh, *op. jam. cit.*, p. 216.

duced by the displacement and return of a foetus.¹ A similar case is related by Caseaux.² In one instance of enlarged uterus, I knew the pulsation of one of the arteries to be mistaken for the drop of the foetus on the finger.³ Caseaux suggests, that a stone in the bladder might impose on us; this seems hardly possible.

Schmitt's objections to this mode of examination as being "superfluous and hazardous" would surprise, and might influence us, were it not that he acknowledges he never tried it.

Application of Auscultation.—In 1818 was announced the discovery, by M. Mayor, of Geneva, that in advanced pregnancy the pulsations of the heart of the foetus in utero could be distinctly heard by the ear laid on the abdomen of the mother;⁴ and he, moreover, proposed to draw from the fact the important practical conclusion, that we could thereby ascertain whether the child were living or dead. It has been stated that the pulsations were, in the first instance, heard accidentally, M. Mayor having applied his ear to the abdomen for the purpose of hearing the sounds produced by the active movements of the child; not long after, M. Lejumeau de Kergaradec, being in attendance on a pregnant lady, wished to ascertain whether it were possible to hear the wave sound produced in the liquor amnii by the motions of the foetus; this he altogether failed to detect, but, while making his investigation near the end of pregnancy, he one day heard a sound which he compared to the movement in a watch, being composed of two distinct sounds like those of the heart, which were repeated from 143 to 148 times in a minute, the mother's pulse beating at the time only 70. While engaged in examining these pulsations, a new sound struck his ear, altogether different in all its characters, being that of a souffle perfectly isochronous with the pulse of the mother; on these phenomena, thus accidentally ascertained, he read a memoir⁵

¹ *Traité d'Auscultation Obstétricale*, p. 283.

² *Traité des Accouchemens*, p. 153.

³ On this subject see Baudelocque, tom. i. p. 206. Desormeaux, *Dict. de Méd.*, tom. x. p. 400.—Velpeau, *Traité des Accouchemens*, tom. i. p. 194. Gooch, on Female Diseases, &c., p. 215. Gardien, *Traité Complet*, &c., tom. i. pp. 507, 510. Mahon, *Méd. Lég.*, tom. i. p. 160, note by Fautrel.

⁴ *Bibliothèque Universelle de Genève*, tom. ix. Nov., 1818.

⁵ *Mémoire sur l'Auscultation appliquée à l'Etude de la Grossesse*, 1822, Paris.

before the Royal Academy of Medicine in December, 1821, being at the time altogether unaware of the discovery of Mayor.

In 1826, Lænnec, in the second edition of his great work on Mediate Auscultation, devoted a chapter to its application to the study of the signs of pregnancy, declaring that he had confirmed the observations of Kergaradec.

In 1829, M. Nauche proposed for adoption a practice founded on a suggestion made by M. Maygrier in 1822, viz., that certain conditions of the gravid uterus might be ascertained by auscultation instituted *per vaginam*; for this purpose, M. Nauche had constructed a modification of the stethoscope under the name of the metroscope, one end of which was to be applied to the os uteri; by which means he asserted that "the movements of the fœtus might be recognized like little jerks, more or less sudden, from the third month of pregnancy, long before the mother felt them herself, or ballottement could be accomplished."¹

In 1833, Dr. E. Kennedy first described in his work on the "Evidences of Pregnancy," a pulsation and a souffle, observed in advanced pregnancy, having their origin in the circulation in the arteries of the umbilical cord, and hence called by him the funic pulsation, and the funic souffle; both being also isochronous with the contractions of the foetal heart.

Lastly, in 1838, Dr. H. F. Nægele, in his work on Obstetric Auscultation, called attention to a phenomenon, in the observation of which, however, as we have already seen, he had been long anticipated, namely, "the sound produced by the plunging movements of the child's limbs" in utero, which he declares "we are frequently able to hear much earlier than they can be felt by the hand of the practitioner, when applied upon the patient's abdomen, or indeed by the patient herself."²

Many others have more recently published valuable observations on this subject, and the application of auscultation as a means of detecting pregnancy has been much cultivated, with results highly beneficial to the interests of science, and our powers of making a correct diagnosis.

However interesting and useful it might be to dwell at length

¹ Des Maladies propres aux Femmes, pp. 752, 753.

² Die Geburtshülffliche Auscultation, p. 62.

on all the phenomena thus described, and to discuss their application to various inquiries connected with obstetric practice, to do so would involve too lengthened a discussion, and many details which, if not foreign to, are at least not required for our present purpose; which is, to point out the method of applying, as tests of pregnancy, and assigning the true value of those sounds which ample experience has taught us to be entitled to the greatest consideration, in such an inquiry.

These are two: first in the order of importance, the sounds produced by the action of the foetal heart in utero; and secondly, the placental, or uterine souffle: these, then, shall be fully considered; the others, but briefly, as having little, or no practical value as means of detecting the existence of pregnancy.

In the first place, then, to speak generally, of the period of pregnancy at which we may have recourse to auscultation, with a reasonable probability of being able to obtain satisfactory evidence by its means; I think it is almost universally admitted, by those who have most carefully and extensively tried it, that until the fourth month it cannot be expected to afford us the information we require. In saying this, however, I do not mean to deny, that in some few rare instances, and under peculiarly favorable circumstances, some of the sounds depending on pregnancy have been occasionally heard, at earlier periods; but these must undoubtedly be regarded as exceptions to what multiplied experience has shown to be the general rule; and accordingly, we find Depaul, the most recent and elaborate writer on this subject, declaring that "auscultation has no chance of success until after the thirteenth, or fourteenth week."¹

In proceeding to make this examination, it should be recollected, that the sounds sought for are often very difficult to recognize, owing to their delicacy, and other causes; so much so, that a great authority, Lænnec, has declared that "the study of the sounds of pregnancy requires incomparably more attention than that of all those presented by the diseases of the chest."²

We should, therefore, adopt every precaution calculated to

¹ *Traité d'Auscultation Obstétricale*, p. 143.

² "L'étude des phénomènes dont nous venons de parler dans cet article demande incomparablement plus d'attention que celle de tous ceux que présentent les maladies de la poitrine."—*Laennec*, tom. ii. p. 466.

facilitate our investigation, and, if possible, render its results conclusive; for there can be no doubt that carelessness, and that perhaps springing from a mistaken idea of the facility of the examination, has often led to disappointment, and to negative conclusions where positive ones might have been obtained, had a little more pains been taken.

The amount of care and attention required will depend, in a great degree, on the period of pregnancy at which we examine; the phenomena sought for being much more difficult to recognize in the earlier than at the advanced stages of gestation, owing to the feebleness of the sounds, and the situation of the uterus.

The best time for making such an examination is early in the day, while the patient is yet in bed, and fasting; the bowels and bladder should be emptied of their contents, which not only renders the examination more free of annoyance, or perhaps pain, to the woman, but by allowing the stethoscope to depress more easily the abdominal parietes, and bring them into contact with the uterus, assists in procuring for us more distinct evidences of the sounds sought for: and, on the other hand, removes certain sources of confusion arising from the presence of intestinal gases; and if the bladder be distended, the necessary pressure may also cause pain, and defeat the success of the examination.

If possible, a room should be selected free from all noise; the patient should be placed lying on the back, and with the limbs moderately flexed—which position saves her from the fatigue which might attend a long examination; relaxes the abdominal muscles, assists in preventing, or diminishing noises arising from muscular exertion, and by enabling us to turn the woman on either side alternately, allows us to make the most complete examination of the whole front and sides of the uterus.

The woman should be placed on a narrow couch or sofa, which should be sufficiently high to prevent the examiner from being obliged to stoop or bend the neck, which, by determining blood towards the head, may confuse his sense of hearing; if the patient is of necessity placed low, then the examiner had better kneel, or use a stethoscope of greater length than usual; the narrow couch allows the examination to be made with equal facility at both sides, which should always be done; if the examiner hold his breath, and keep his mouth open, his delicacy of hearing will be

increased. Examination with the patient standing upright, is only admissible at advanced periods of pregnancy.

It is scarcely necessary to observe, that any attempt to examine through the ordinary dress of the woman can only be attended with failure; neither ought she to have on stays, which, by their compression from above, render the abdominal parietes tense; the abdomen should have no covering except the chemise, and with a certain class of patients, as in hospitals, who have this article of dress made of very thick and coarse material, it may produce a grating or creaking sound, which is unfavorable to our success. I have found it necessary, in such instances, to remove it, and cover the abdomen with a fine handkerchief, or thin sheet of soft quality, and even this it may occasionally in difficult cases be necessary to dispense with; and I have thus been able to discover the sounds sought for, when they could not be detected with only a fine thin dress intervening.

With regard to the choice between the stethoscope and using the naked ear, the former undoubtedly has many advantages; it is more in accordance with the feelings of delicacy; it is safer and more agreeable for the practitioner, where there is, on the part of the patient, want of personal cleanliness, or in cases of infectious diseases; by its use, we can more completely and more easily isolate the sound we want to examine from others in its vicinity, and ascertain exactly its limits. In early pregnancy, when the uterus lies within the cavity of the pelvis, we could not, by the ear, depress the abdominal integuments so as to come into contact with the globe of the uterus, but with the stethoscope we can, readily, and must, in order to accomplish our object; it answers best, also, when the uterus is greatly distended with liquor amnii, or the cavity of the abdomen by ascites, as we can, by its means, sufficiently depress the intervening parietes and bring them into contact with the body of the child, which cannot be done by the ear; the pressure on the stethoscope should not be made by the hand, but by the head; neither should any part of the patient's dress be in contact with the stem of the instrument, as, in either case, sounds are produced which may confuse the examiner.

If pregnancy be advanced, we cannot, without great inconvenience, examine by the ear near the pubes or in the iliac fossa,

and the attempt to do so would be very repugnant to many. In examining with the ear alone, large surfaces are brought into contact, and the head is of necessity much stooped, from both which causes, sounds calculated to confuse are produced; but notwithstanding these disadvantages of immediate auscultation, I must observe that, in not a few instances, where I could not hear the sounds, especially the foetal pulsations, by the stethoscope, I have distinctly recognized them by the naked ear.

Certain peculiarities in the woman herself may embarrass us, and add to the difficulty of our examination; she may be naturally of an irritable and impatient temper, and will not submit quietly; or, if she have an object in defeating the accuracy of our investigation, she will fidget about, or set her muscles tense, or cry out that she is hurt, &c.

It has been already observed, p. 165, when speaking of the mode of making an ordinary manual examination of the abdomen, that there is, in some cases, a painful sensitiveness of the integuments, or of the uterus itself, so that the woman can hardly bear to have them touched; this, of course, may equally interfere with us in the kind of examination now under consideration.

It occasionally happens also, that, in addition to a certain amount of irritability of the uterus, it has a tendency to periodical contractions, which, although generally painless, are, in many instances, accompanied by a sense of uneasiness, which is increased on the one hand, by the motions of the child within, or by external manipulation; under such circumstances, this latter source of irritation should be abstained from, and also stethoscopic examination, lest we might thereby throw the organ into increased action, and cause the premature expulsion of its contents; by a little delay, this irritability will, in all probability, subside; if not, and there exist some very urgent motive for completing the examination, we must resort to sedatives, as opium or chloroform.

Sometimes the integuments are enormously loaded with fat; in which state, they interpose an obstacle to our success; or inconvenience may arise from an extremely relaxed state of the abdominal muscles, such as not unfrequently occurs in women who have borne a great number of children, or where separation has

taken place between certain of these muscles; in which case, the stethoscope is liable to slip from one point to another.

Our examination may also be embarrassed by considerable noises proceeding from intestinal gases rolling about, or contractions of the abdominal muscles or uterus may confuse us not a little; but, in general, these obstacles are only transitory. It has happened that the maternal respiration has been heard as low down as the pubes, and might possibly for a moment be mistaken by an inexperienced observer for a uterine souffle, though the distinction is abundantly easy, the one being exactly synchronous with the maternal pulse, and the other much lower, and becoming more distinct as we approach the thorax, and recede from the uterus.

So, also, the pulsations of the mother's heart are occasionally, though very rarely, audible at the supra-pubic region, and may thus, especially if at the time accidentally accelerated, be mistaken for those of the foetal heart, even by those well versed in such examinations; as happened in a case of Dubois', to be related hereafter: and should it happen, as occurred to Depaul, in more than one instance,¹ that along with these maternal pulsations there should be a distinct souffle derived from the same source, the combination might for awhile impose on us, when in reality pregnancy did not exist: the last-mentioned test would soon disclose the truth.

This point would deserve especial consideration, indeed, should the experience of others confirm the statement of MM. Vegla and Jacquemier, that in a large proportion of pregnant women, one in every four, a well-marked bruit de soufflet may be heard in the precordial region.²

I have found the presence of abdominal tumors render the application of auscultation very unsatisfactory, and sometimes fruitless; and where the abdomen is distended by dropsy, this mode of examination may fail altogether in discovering the sounds sought for: and as the same cause offers a great obstacle to feeling the child, or its movements, such a combination is apt to be attended with extreme obscurity in the indications, and conse-

¹ Op. jam cit., p. 160, and pp. 201, 202.

² Theses de la Fac. de Méd. de Paris, 27 Dec., 1837; for an abstract of Jacquemier's observations, see Depaul, p. 80.

quent embarrassment and difficulty in forming an opinion. (See cases in illustration, pp. 123, 124.)

It should not be forgotten, that our success will sometimes depend on our making a proper degree of pressure with the end of the instrument, since the seat of the sound which we seek to discover may not be, and very often is not, in contact with the surface on which we apply our ear, or our stethoscope; and under such circumstances, the intervention of a fluid, such as the liquor amnii, may effectually prevent the transmission of the sound, until by gently increasing the pressure on the integuments, we carry them inwards, and by displacing the intermediate fluid, whether air¹ or water, we bring them into more immediate contact with the source of the sound, and obtain a solid medium for its transmission. For the same reason also, we may occasionally find it necessary, when the abdomen is much distended, especially in cases of an excessive quantity of liquor amnii, to examine the patient standing upright instead of in the recumbent or supine position; because, by doing so, the child is made to press more firmly against the anterior parietes of the abdomen, and is consequently brought more closely in apposition with the end of the instrument.

According to the period of pregnancy at which we adopt this mode of examination, must be the situation, or part of the abdomen to which we should direct our attention; for instance, within the first four months, if we are to hear anything, it will be just above the symphysis pubis; at more advanced periods, the phenomena will of course be heard proportionally higher in the abdomen, and often in its lateral regions.

But, at whatever period we examine, we must bear in mind, the necessity of much patience and care in making the examination; recollecting, that experience has abundantly proved, even in the most practised hands, that the phenomena we seek for are often inaudible at particular times, although really existing in perfection; and hence the necessity of repeated examinations, on different occasions, and in various situations and positions, before we may be able to come to a final conclusion; and especially if the evidence hitherto obtainable has been only negative.

¹ Whether in the intestines, the cavity of the peritoneum, or in the uterus itself, where it sometimes collects in considerable quantities during gestation.

In tracing the history of this mode of investigation, allusion has been already made to another mode of applying auscultation proposed by M. Nauche, by means of an instrument which he calls a *metroscope*,¹ consisting of a tube of wood curved at nearly a right angle, one end of which is to be introduced per vaginam and applied to the os uteri; by such means, he asserts, that the presence of the placenta in the latter unfavorable situation may be detected, and the foetal movements recognized, as early as the third month, and before the mother is conscious of them herself. He adds, that both he and M. Pichon thus discovered the existence of pregnancy in several cases under treatment as diseases of the uterus. The writer very readily acknowledges his total want of experience in the use of the *metroscope*, but cannot avoid expressing his entire disbelief in its asserted advantages; and even if these were confirmed, few cases are likely to occur of such extreme urgency as to induce us to overcome our reluctance to adopt, or even propose such a mode of examination, which very few indeed would be found to permit, and which experience has now sufficiently shown to be attended with no small amount of difficulty, and, of course, in a proportional degree, likely to be injurious, while it has absolutely no practical value.

Having thus premised these general observations on the circumstances connected with this mode of examination, and the method of conducting it, we must now consider the special characters and value of the sounds which we thus seek to discover; and in the first place, as to the placental, or uterine souffle, to the consideration of which we shall give the precedence, though not as being of the greatest importance, but as being audible earlier than the pulsations of the foetal heart.

This phenomenon presents many modifications of sound; but two characters are constant; first, it is a sound without impulse, or pulsation; and, secondly, it is always exactly synchronous with the mother's pulse at the time of the examination, and varies in the frequency of its repetitions, with any accidental variation which may occur in the maternal circulation. In cases of syncope, it has been observed to become much more feeble and indistinct, or even to cease altogether, for a time.

¹ *Maladies propres aux Femmes*, p. 752.

This sound has been familiarly compared to that produced by blowing gently over the lip of a wide-mouthed phial, or to the cooing of a dove, or a whispered "who;" but, there is a great variety in the modifications of sound heard, not alone in different instances, but even in the same case, and during one examination; and it may be remarked, that these variations, and also the intermissions to which this sound is liable, are occasionally observed to coincide with a contraction of the uterine fibres; or, with some decided movement of the child, bulging out into prominent relief the wall of the uterus; at which moment, the canals of some of the uterine bloodvessels are more or less compressed, and the currents through them proportionally obstructed.

In general, this sound exactly resembles the souffle, with which all are familiar, produced in the larger arteries when under compression, wanting, however, any pulsation; but I think Dr. Hope has stated too much in saying that the uterine souffle "does not exist independent of pressure, except possibly in anæmic cases."¹

The late justly celebrated Nægele, of Heidelberg, thought that the true souffle of pregnancy was never perfectly imitated in any other condition of the system, and, consequently, considered this sound as a very important and conclusive proof of pregnancy; but, I believe, he is almost alone in that opinion; the most accurate investigators having declared, as the result of their experience, that they had often met with sounds, depending on causes altogether unconnected with pregnancy, which could not be distinguished from the true souffle heard in that condition; of which fact we shall have occasion to notice illustrations subsequently.

Perhaps, the sound which the uterine souffle most strikingly resembles, is that heard in a varicose aneurism, in which streams of arterial and venous blood commingle, as they do also in the uterine circulation during pregnancy; under which circumstances, the walls of the uterus may be considered as forming "a tissue of natural varicose aneurisms:" there is, however, one marked defect in the comparison, the murmur being in the one case, constant, and in the other, generally interrupted.

In each souffle there may, in most instances, be distinguished three parts: it commences with a short rushing sound, or whiz,

¹ Diseases of the Heart, &c., 3d ed., p. 133.

then the full volume of sound is developed, and then again, this gradually diminishes, or dies away; but these distinctions cannot always be made, and we are only conscious of the full gush of sound and its decline. In general, the souffles are heard in succession, with tolerably distinct intervals; but this is not always so, as they sometimes run into each other without any clear interval, becoming, in fact, a continuous murmur, with augmentations of intensity, which, in some cases, seems to be caused by the rapidity of the maternal circulation, not giving time for one souffle to cease before another has begun; and, again, the souffle is sometimes, though rarely, a continuous murmur, with little or no augmentations.

In some cases, as gestation draws to a close, the souffle becomes weaker and more sibilant; changes which may, perhaps, be fairly explained, at least in some instances, by the alterations made in the relation between the uterus and placenta: provisions being gradually set up, by which the amount of circulation is progressively diminished preparatory to its cessation; as by fatty degeneration of the placenta, or by calcareous concretions blocking up the terminations of the foetal vessels. H. F. Nægele records ten instances in which he found these concretions in connection with the sibilant sound, as first pointed out by Hohl. Such changes appear quite in conformity with an arrangement by which many organs in the animal economy having accomplished the objects for which they were designed, begin gradually to alter and dwindle away, as is seen in the atrophy and consolidation of the ovaries when the reproductive power has ceased; in the obstruction of the oviduct in birds, when the vitelli have been all expended; and in the closure of the os uteri or cervical canal in women when advanced in years.

In considering when this sound is first audible, we ought for practical purposes to regard the question under two points of view: first, when it is *possible*; and secondly, when it is *probable*; or when in an ordinary case we are *likely* to hear it.

It may then be stated generally, that it *may* be heard as soon as the uterus has become sufficiently developed for its fundus to rise above, or to a level with the upper margin of the anterior wall of the pelvis, so that the end of the stethoscope may be brought into contact with it. Now this does not usually happen

until at least three months of pregnancy have been completed; and, accordingly, a reference to the writers of greatest credit, who have fully investigated this question, will show that almost all agree in saying that in general we may not expect to make this sound available as an evidence of pregnancy until the fourth month; before which time I have never been able to hear it, but others have been more successful; and it seems incontestable that competent observers have recognized it before the end of the third month; but such instances are only of rare occurrence, and ought to be regarded as fortunate exceptions to the general rule.

Dr. Kennedy declares he has "frequently detected it in the tenth, eleventh, and twelfth weeks."¹ Depaul relates two cases in which he succeeded at equally early periods;² but adds that in two other cases in which the exact time of conception was accurately known, the souffle could not be detected by the most careful and frequently repeated examinations, until the end of the fourteenth or fifteenth week.

The same writer states, that of 380 women examined expressly with reference to this matter, there were 307 whose pregnancy had advanced beyond the fifth month, and seventy-three who were within the first half of the period of pregnancy.

Of the 307, the souffle was heard in 295, and in twelve it could not be detected.

Of the seventy-three composing the second group, there were eleven who were at the end of the third month, and in only one of these was this sound heard; five were not so far advanced, and in none of these was it audible; twenty-two had reached three and a half or four months; and in only thirteen of these could the souffle be recognized: of the remaining thirty-six, who were more or less near the end of the fourth month, it was absent in nine.³

The situation in which the souffle is to be heard must, of course, vary as to height in the abdomen according to the period of pregnancy at which we examine, and the development of the uterus; but, supposing the examination to be made at an advanced period of gestation, my experience leads me to say that it

¹ *Evidences of Pregnancy*, p. 82.

² *Traité d'Auscultation Obstetricale*, pp. 174, 176.

³ *Op. jam cit.*, pp. 173, 174.

is most frequently heard about the situation of the Fallopian tube of the right side; which is also the opinion of Hohl and Stoltz; while the researches of H. F. Nægele in 600 cases, resulted in finding it 238 times at the left side, and 141 at the right; in twenty it could not be heard anywhere; in 160 it was either very feeble or limited to the inguinal regions, or was spread over the whole abdomen; in seven only was it situated in the fundus uteri; in thirteen it was in the anterior wall of the organ. The space over which it may be heard varies much; in some cases it is audible over a space from four to five inches in diameter, in others it is confined to a spot which the end of the stethoscope will cover; in a few rare instances it has been heard over almost the whole of the uterine surface which can be brought under examination; but in almost every instance there is some one spot where the sound has an intensity not to be met with elsewhere; it is seldom heard exactly in the middle line, and still more rarely very low down; most frequently we recognize it in the lateral region of the uterus.

Its situation does not change during the course of the same pregnancy; but in whatever region of the uterus it is first heard, it will in future be found, if recognized at all, for it is liable to intermissions—at least we shall occasionally be unable to hear it where we have already heard it a short time before, and where we shall shortly again recognize it; nay, it will sometimes disappear and again return in the course of a single examination, although the heart of the mother continues all the time to beat with regularity.

It is not necessary for my purpose to discuss the numerous and dissentient opinions which have been offered as to the seat and cause of this sound; and I must confess myself unprepared to offer any satisfactory explanation of the mode or mechanism of its production: it only devolves on me here to point out, as clearly as may be, its characters, and assign its real value as an evidence of pregnancy.

I may, however, observe that in the vast majority of instances, if not in all, I believe it to have its origin in that part of the vascular apparatus of the uterus more immediately connected with the placenta; and that, in almost all cases, if the situation of this latter organ be accessible to the stethoscope, we shall

there almost certainly hear the souffle: this correspondence has been indisputably proved, in many cases, by post-mortem examination: ten instances of which are recorded by H. F. Nægele: but it is equally certain, that it may also occasionally be heard in other parts of the uterus, and in situations distinct from it, and under circumstances independent of pregnancy, as for instance, in those states in which the uterine tissue and its vascular apparatus are altered, as in pregnancy, as happens when tumors are developed in the uterus.

It may also be imitated in cases of abdominal tumors, whether connected with the uterus or not, which may happen to compress arterial trunks, or, in which arteries of some size exist; thus it has been distinctly heard in an enlarged liver, or ovary.

A case was formerly under the writer's care, in which enormous enlargement of the uterus, of that kind which has been called vascular sarcoma, was accompanied by this phenomenon in its most perfect condition; and in another case of abdominal tumor (supposed to be of the spleen) pressing on the aorta, this sound was equally distinct: moreover, it may at any time be imitated by pressing the end of the stethoscope over the region of the iliac vessels.

In a case seen in consultation with Dr. Churchill, a large abdominal tumor gave rise to the suspicion of pregnancy, of which several of the symptoms existed, especially a very distinct placental murmur. On careful examination, no doubt remained as to the morbid character of the tumor, in the right side of which an artery of considerable size could be felt pulsating, and at the opposite side, a much smaller one was distinctly recognized: we found, that when the stethoscope was applied over the course of the larger vessel, without any pressure from the end of the tube, a sound perfectly resembling the placental murmur was constantly heard, but not when the instrument was applied over the smaller artery.

In like manner, M. Bouillaud has recorded two cases;¹ in one of which "an ovarian tumor coincided with a bruit de soufflet exactly like that which occurs in pregnancy," and in the other, a cyst of the right ovary presented a murmur, which was decided

¹ *Traité Clinique, &c., tom. i. p. 248.*

by six or seven physicians and a number of students, to be a placental souffle; the case was pronounced to be extra-uterine pregnancy, a vaginal Cæsarean operation was performed, and the woman died.

Such facts accord but ill with the opinions of those who, like Nægele, think that the souffle of pregnancy has a distinctive peculiarity, by which it may be known from any other; when writing on this subject formerly, I stated that it might be so imitated that the nicest and most practised ear could not detect any difference, and subsequent experience has, I think, confirmed the truth of this opinion: thus, in addition to the testimony just quoted, we find Depaul stating, that in a case of fibrous tumor of the uterus, seen by him and Dubois, "examination with the stethoscope detected a bruit de souffle which differed in no respect from that belonging to pregnancy;"¹ and he immediately after, relates some strongly confirmatory cases; in one of which, examination after death proved that the tissue of the uterus around the tumor in which the souffle had been heard, had its vascular system developed as in pregnancy.²

It is well known that females laboring under affections of which anæmia is a prominent symptom, as in chlorosis, have well-marked murmurs in the vessels of the neck. These murmurs are not confined to this situation, but not unfrequently exist in the abdomen also. Thus, in the case of a young woman, of twenty-five years, not pregnant, of full habit, but pallid and anæmic, and with the abdomen tumid from flatulence, Dr. Hope³ heard continuous murmurs, with augmentations corresponding to the pulse, on each side of the umbilical region, far from the aorta: the continuous murmur sometimes ceased, and left the arterial whiff. This occasionally happened, for a few moments at a time, though the stethoscope was not moved from the ear, and the cessation was always connected with an audible movement of flatus under the end of the instrument.

In an anæmic girl, of nineteen, continuous murmurs, with slight augmentations, and with an intermixture of *delicate musical*

¹ Op. jam cit., p. 210.

² Op. jam cit., p. 212.

On Diseases of the Heart, 3d ed., pp. 135, 137.

notes of humming and whistling, were heard, about a hand's breadth in front of the anterior superior spinous process of the ileum, and two fingers' breadth above it.

Of these cases, he says, that "though the subjects of them were single, the murmur was perfectly identical in its nature with that which authors describe as accompanying pregnancy." The fact has been already specially alluded to, p. 178, that a souffle existing in the mother's heart may be heard at the lowest part of the abdomen, and be mistaken for that of pregnancy, but may be distinguished therefrom by being accompanied with pulsations, and by its intensity increasing as we recede from the uterus, and approach the thorax, in our examination; which is also the case with the sound of the maternal respiration, when audible in the supra-pubic region; which, besides, may be at once distinguished from the true souffle by its not being synchronous with the mother's pulse, but with the successive inspirations; and if these be suspended, the sound ceases for the time.

It is not to be forgotten, that in a considerable number of cases of pregnancy, the souffle cannot be detected.

Making all due allowance for the want of positive value, or conclusiveness, under which the existence of this sound must be acknowledged to labor, it must still be regarded as of considerable importance, when heard in conjunction with other presumptive signs of pregnancy; under which circumstances, it not only acquires increased value in itself, but tends to confirm the other indications; but even so, we should yield our judgment with reserve, and cautiously repeat, again and again, our examination: but when the sound is met with, where our judgment, independently of its presence, would either remain in great doubt, or incline to a negative conclusion, it ought to have very little influence in deciding our opinion; taken by itself, it has little or no practical value as a sign of pregnancy.

Having thus examined the circumstances connected with the uterine souffle, we proceed, in the next instance, to consider a phenomenon of still higher value, as a test of pregnancy; the discovery of which, in 1818, is undoubtedly due to M. Mayor, of Geneva, who, however, does not appear to have followed up his discovery, or prosecuted any further researches on the subject; but simply announced the fact that, by laying the ear on the

abdomen of a pregnant woman, the pulsations of her child's heart might be heard; and suggested the important inference which might thus be drawn as to the certainty of the child's life.

It would not, I think, be an exaggeration to assert, that this discovery of M. Mayor's has been the means of making some of the most important and valuable additions to obstetric medicine with which it has ever been enriched; since it unquestionably enables us, in many cases of doubt and difficulty, not to be solved by other means, to detect, perhaps in a moment, and by a single test easy of application, the existence of pregnancy; and also, under many circumstances of peculiar moment and practical importance, to ascertain, beyond all controversy, the life of the child in utero, or, with almost equal certainty, infer its death.

The phenomenon now under consideration differs, in every respect, from the uterine souffle; it is derived from the successive contractions of the child's heart and the pulsations so produced; these, like those of the heart of the adult, are conveyed to the ear of the examiner in pairs, which have very generally received the familiar name of tic-tacs, from their resemblance to the sounds of a watch.

These double pulsations, at whatever period of pregnancy they may be heard, vary in number from 120 to 160; but the limits are in general between 130 and 150.

Some, like Bouillaud, have maintained that the frequency of these double heart-beats was inversely as the age of the child, and that they became gradually fewer as the time of birth drew nearer; this, however, does not correspond with my experience, nor with the elaborate series of examinations, purposely made to determine this point, by Dubois, Depaul, and Jacquemier, by which it was satisfactorily ascertained, that the rate of pulsation was alike at all periods of foetal life at which it could be ascertained.

These pulsations are very liable to change their rate of repetition; being, on the one hand, liable to retardations and intermissions, and, on the other hand, they are occasionally observed suddenly to acquire, momentarily, such an increased rapidity as not to be counted, without any alteration, at the same time, taking place in the mother's pulse: these sudden and temporary accelerations of the foetal heart-beat have been frequently ob-

served to occur in connection with violent, and sometimes apparently convulsive movements of the child; a fact which would seem to indicate that the foetus is liable to sensations or impressions having the power of influencing its circulation.

In some instances, the foetal heart-beats have been found to decline and become slow and feeble, or even to cease, where the mother has suffered syncope, whether produced by loss of blood, a moral emotion, or by other causes; and sometimes this change has been noticed without any discoverable cause.

Facts abundantly prove, that the rapidity of the foetal heart-beat bears no constant relation to that of the mother's pulse, and is not, in general, correspondingly affected by circumstances which have the power of retarding or accelerating the latter; nay, I have found the very contrary to happen, and in one case of fever especially, I had full opportunity for observing, that while the mother's pulse became gradually slower, the pulsations of the foetal heart became accelerated.

Hohl and Carrière paid much attention to this point, and instituted numerous experiments in elucidation of the independence existing between the two circulations; by examining women under various forms of excitement, as after rapid walking, nervous agitation produced by quarrelling, during febrile affections, while asleep, &c., and always with the same result, viz., that of showing that the condition of the one circulation was unaffected by changes made in the rate of the other; and I would observe, that in those cases in which great acceleration of the foetal pulsations have been found to accompany a very quick pulse in the mother, while laboring under some malady which affected the respiratory function, such a consequence should, under such circumstances, be most appropriately attributed to the alteration produced in the quality of the maternal blood, rendering it less fit for the wants of the child.

Hohl records, that in mild cases of Asiatic cholera, no change was observable in the foetal pulsations; but where the prostration and anxiety were very great, and the pulse at the wrist imperceptible, the sounds of the foetal heart became much quicker and soon stopped. Hemorrhage and venesection have been occasionally productive of a like result.

These variations in rapidity, above alluded to, are often only a

matter of a moment, occurring and ceasing within the limits of a single examination; which may be said also, of the intermissions in the heart-beat, of which we are sometimes conscious, the sound ceasing for a few seconds, and then being heard again as before, a fact which it seems difficult to explain. But it is, at least, curious, that the same kind of intermission was observed by Hoefft, in the experiment by which he sought to imitate the foetal pulsations, by placing a watch rolled up in cotton within a glass vessel hermetically sealed, which was again inclosed within another vase of glass containing water; and on applying the stethoscope, the tic-tacs of the watch were distinctly heard, but became occasionally inaudible.¹

The sound conveyed to the ear by these foetal heart-beats, may aptly be compared to that of a watch heard through one's pillow at night. In the vast majority of instances, it is merely that of double pulsations exceedingly fine and delicate, but separated by a distinct interval, and without murmur. Occasionally, however, though rarely, they have been heard accompanied by a slight frottement, or by a murmur, without any subsequent indication of a pathological cause. Thus, Dubois says, that when the beats are quite distinct, they are very frequently attended with bellows murmur; and he ascribes this to the mixture of the two columns of blood of the pulmonary artery and the aorta. Depaul speaks of this occasional souffle as being sometimes so strong as to obscure or conceal the second of the heart-beats.² Bouillaud also heard somewhat the same. For myself, I have never perceived it; and I am disposed to believe that, in some of these instances, a souffle existing in the funic vessels has been erroneously referred to the heart, an admission which I may observe is formally made by Depaul, in a subsequent part of his work, in which he says: "*Je suis obligé d'admettre aujourd'hui, que si quelquefois un souffle peut se joindre à l'un des bruits qui résultent de la contraction du cœur de l'enfant, il est incontestable que, plus souvent encore, une pulsation avec souffle part de l'un des points du cordon ombilical,*" p. 384. But he gives the particulars of two cases in which

¹ Beobachtungen über Auscultation der Schwängern neue Zeitschrift für Geburtskunde, 1838.

² Op. jam cit., p. 242.

this souffle in the heart was not only recognized before birth, but also after; in ten hours it had much diminished, and next day, entirely disappeared: the children were strong and healthy.

In a few rare instances, the foetal heart-beat has been heard, accompanied by that peculiar resonance so well known by the name of *tintement métallique*, or metallic tinkling, such as is heard in cases of empyema with perforation.

The intensity, or force of the heart-beat sound, unlike the rapidity, is directly as the period of gestation; being, at first, exceedingly slight and feeble, growing stronger as gestation advances, and having its greatest force as the close of gestation approaches; of course it will be found to have different degrees of force or distinctness in different cases, under similar circumstances, and at the same period of pregnancy, owing to a variety of causes, depending either on individual peculiarities in the constitution of the foetus itself, or difference of its position, or of the media through which the sounds have to pass; and even in the same case, and during the one examination, they occasionally assume for a moment or two, an obviously increased or diminished force.

The space over which the tic-tac may be heard will vary, as a general rule, from three to four inches in diameter; but there will always be one spot where its maximum of intensity exists, and from which, as we recede, the sound gradually diminishes in strength, until, at length, it is lost altogether: this spot is, of course, liable to change, as the child changes its position.

If the examination be undertaken before the termination of the fifth month, we must be prepared for the necessity of most careful investigation, and this perhaps often repeated; and even then we may have to encounter frequent disappointment; the sounds, at these earlier periods, are so slight, so much of the uterus is still buried within the bony walls of the pelvis, the quantity of liquor amnii is so much greater relatively to the size of the foetus, and the motions of the latter are so much freer and more constant; and hence the fact, so often noticed, that, having carefully examined some particular spot without being able to hear the heart-beat, in a moment after it is there detected quite distinctly, and *vice versâ*.

The time when these foetal heart-beats may be first heard, must,

as in the case of the uterine souffle, be considered under two points of view: when it is first *possible* for us, and when are we *likely* to hear them?

We have seen, with regard to the souffle, that, as a general rule, it was available in the fourth month; and so, with reference to the heart-beat, we may lay it down as the general law that it is audible in the fifth.

In a few rare cases, it is said to have been heard so early as the end of the third month, or, still more rarely, even a little earlier. Depaul relates two or three such cases, and in one of them, it would appear that pregnancy had not advanced beyond eleven weeks and four days;¹ but these can only be regarded as rare exceptions to a general rule, of which, I must say for myself, I have not met any.

As regards the situation in the abdomen, in which the heart-beat will be heard, this will, of course, as in the case of the souffle, vary according to the period of pregnancy at which we examine; and so, also, to a certain extent, with regard to the part of the uterus in which it will be most frequently detected; if, for instance, the case before us be one of those rare exceptions in which the heart-beat is discovered at three months, then it must be heard through the fundus.

As a general rule, it may be stated that the foetal heart-beat is heard a little higher in the abdomen, in cases of first pregnancy, than in others, as the abdominal integuments then support the uterus and its contents better, and keep them higher, than after repeated childbearing.

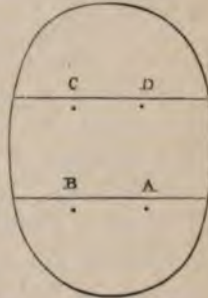
It has been already observed, that the heart-beat in the latter months, is usually audible over a space of from three to four square inches, according to the period of pregnancy and the force or intensity of the sound; in a few instances, it can be heard over almost the whole surface of the uterus: while, on the other hand, in early pregnancy it often can be heard only in a spot which the end of the stethoscope is sufficient to cover.

Its seat or source being the heart of the foetus, and the foetus having, in most women, a great disposition to change its posture, the situation of the sound may consequently be different at

¹ Op. cit., pp. 174, 175.

different times, especially from the sixth to the eighth month. But, in the great majority of cases examined at near the full period of pregnancy, the heart-beat will be heard about the middle of a line drawn from the anterior superior spine of the ilium to the umbilicus; or, if we suppose the uterus trisected into three equal portions by two lines drawn across it at right angles with its long diameter, and these lines trisected, as in the diagram, the heart-beat will be most distinctly heard at A; or if not there, at B. It will be heard at C, or D, if the child happens to be sessile, or presenting the nates: it is occasionally, but not often, heard in the median line.

Fig. 6.



The characters of the foetal heart-beat are so peculiar, that one would suppose beforehand, that no mistake could arise on the matter, and that no other sound or pulsation could be mistaken for it; and yet, such errors have occurred, and that, too, in no unskilful hands. Still, a proper degree of attention ought to enable any one at all accustomed to such investigations to draw the requisite distinction, whether the sound heard be produced in one of the abdominal arteries, or even in an artery of the uterus itself, if such could be. The absence of the double tic-tac, and the lesser frequency of the sounds; besides, comparing them with the mother's pulse, would disclose to us the isochronism between it and the sounds heard, and their corresponding variations, if the rate of the mother's pulse be momentarily excited, or otherwise altered.

But, when the sound heard in the uterine region happens to be that of the mother's heart beating very quickly, as already adverted to, p. 178, then the mistake is rendered much more probable; the sound consisting, as it does in such case, of the double beat, and rendered more faint and slight by the distance from its source. But still, the test of synchronism, or correspondence with the mother's pulse, and the increase in the force and distinctness of the sounds as we recede from the uterus and approach the thorax, ought to disclose their true source. But the occurrence

of cases, such as I shall now refer to, ought to make us very cautious.

The late Dr. Labatt told me that he was called in to give an opinion on the propriety of using instruments, in a case where the attending physician hesitated to use the crotchet, because he could hear the pulsations of the foetal heart: it turned out that the woman was not pregnant.

The following is related by Dubois: "A young woman, in whom the menses had ceased for five months and a half, applied for admission at the *Maternité*, under the supposition that she was pregnant; the size of the abdomen corresponded with the date of the cessation of her menses, and she assured him that she felt the child move. In about a month after, Dubois ausculted her, and found a double pulsation, varying from 128 to 130, at the lower part of the abdomen, on the left side. Happening shortly afterwards to feel her pulse, he was astonished to find it beating at precisely the same rate. On repeating his auscultation, he discovered that these double pulsations became more and more distinct as he approached the epigastrium, so that it was impossible not to recognize their real source; the sound of the patient's heart extended over the whole abdomen, and at its lower portion was so feeble, as to be easily mistaken for the sound of a foetal heart: upon making a careful examination per vaginam, it proved that she was not pregnant."¹

The peculiar value of the heart-beat, as an evidence of pregnancy, consists in its being available at a time, and under circumstances, when other signs may be very equivocal, owing to conditions which may obscure, or simulate the existence of that state; and secondly, in being, when once heard, perfectly decisive by itself, not only of the fact of pregnancy, but also of the life of the child.

Then the necessary examination is easily made, and, if properly conducted, is in no way repugnant to the feelings of the woman, and so may be readily made available under many peculiar circumstances; as, for example, in the case of women who, having an interest to conceal their real state, would not permit, or, pretending to submit, would take care to defeat other more ordinary

¹ British and Foreign Medical Review, Oct. 1839, p. 371.

modes of investigation; or under other circumstances, where, without any motive for deception, there coexist with pregnancy anomalous or morbid conditions of the uterus, or other abdominal organs, rendering the diagnosis by the ordinary tests either impracticable or unsatisfactory, as, for instance, where pregnancy is complicated with cancer uteri; in cases of ovarian disease, or of fibrous tumors of the uterus, as in case referred to p. 124; or under such circumstances as existed in the very interesting case of paraplegia, already quoted, p. 121, from Depaul; under which combinations, the detection of the real state of the patient by the usual means, is often found a matter of almost insurmountable difficulty; and yet, by the application of the stethoscope, it may be that in a moment, and perhaps by a single examination, the foetal tic-tac is heard, and all further doubt about the nature of the case at once put an end to. There would be no difficulty in instancing, also, a large class of cases, independent of organic disease, in which equally great doubt may occur, which might also be thus solved; in illustration, I may refer to the case of E. G., already related, p. 80, where menstruation was suppressed for two years previous to conception; or to that quoted, p. 78, from Dr. Merriman, in which pregnancy occurred after the woman had apparently ceased to menstruate, and delivery did not take place until eighteen months after the last catamenial period; or, on the other hand, we may have to deal with one of those cases, in which menstruation continues for some months after conception.

The number of cases of pregnancy advanced beyond the fifth month, and the child living, in which the heart-beat cannot be heard, is but small; and still smaller, if the examination be made nearer to the full time. Depaul and Jacquemier examined 906 women, in the last three months of pregnancy, and only failed eight times in detecting the heart-beat, and in six of these eight cases, it turned out that the child was dead.¹

This points at once to one of the defects under which this mode of examination labors, when compared with other more ordinary methods of investigation, namely, that it affords us no information where the child is dead; and, in this respect, it is

¹ *Op. jam cit.*, pp. 252, 253.

inferior to ballottement, and other means which answer equally, whether the child be alive or dead; hence, also, it is obvious that our failing to detect the heart-beat affords no conclusive evidence against the existence of pregnancy. Another obvious defect in this method is its not being available during that period of pregnancy which is most obscured by doubt.

It is also to be recollected, that in those cases already alluded to, in which tumors and enlargement of abdominal organs obscure the evidences of pregnancy, they are also apt to render the detection of the foetal heart-beats much more difficult than in ordinary cases. And the same observation will apply to those cases in which there happens to be much muscular action in the abdominal parietes, or great and noisy pulsation of some of the abdominal arteries, which may create considerable embarrassment in our detecting the real heart-beat sounds; especially in the earlier months, at which period it is peculiarly necessary to have the bowels and bladder completely empty, for reasons already dwelt on, p. 175; and it is hardly necessary to add that, under such circumstances, the most complete absence of noise is indispensable to our success.

When about to examine for the heart-beats, at advanced periods of pregnancy, it will often facilitate our finding them, to seek, with the hand laid on the abdomen, for the most bulky and solid part of the contents of the uterine tumor; and there they will be most frequently discovered, and most distinctly heard. And if we do not succeed on one side, we should then try at the other; or we may find it necessary, by changing the position of the mother, or disturbing the child, to cause it to adopt another position, in which the pulsations will be more readily heard.

In doubtful cases, we should examine again and again, recollecting that, although we may have hitherto failed, in repeated trials, to detect the heart-beat, it may be recognized in perfection an hour after.

The Funic Pulsation and Souffle.—It has been already stated, that we are indebted to Dr. Evory Kennedy for the discovery of a pulsation and souffle, occasionally to be detected in the umbilical arteries during pregnancy.

It is universally understood, that the circulation between the mother and the child is carried on through the vessels of the funis

umbilicalis, the vein carrying the renewed blood from the placenta to the child, from which, after supplying its wants, it is again returned by the two arteries. In practice, many opportunities of ascertaining this are afforded, as when the funis prolapses immediately after birth, &c.; and we find that this current of blood, returning from the child, is accompanied by arterial pulsations, as in other situations, and that the number of these corresponds exactly with the number of double pulsations heard at the same time in the foetal heart.

If the cord should happen to lie over some solid part of the child in utero, and next the uterine wall, and if this latter and the abdominal integuments should happen, at the same time, to be unusually thin, the cord and its pulsations may be felt by the finger, and the latter heard by the stethoscope; and in addition to these, there may be occasionally heard a souffle quite distinct from that already described, from which it differs both in situation and peculiar characters, being much less marked in its volume of tone or sound, and equalling in frequency the double heart-beat of the child; to this, Dr. Kennedy gave the name of the funic souffle; and there seems little doubt that it is, as he supposes, produced by accidental narrowing of the calibre of one or both of the umbilical arteries, by pressure from a limb, or the body of the child, or perhaps by the stethoscope. Dubois referred the seat of this souffle to the foetal heart; and Depaul at first assented to this opinion, but afterwards, as already mentioned, p. 190, adopted the more correct explanation originally given by Dr. Kennedy.

As means of detecting pregnancy, these phenomena have little or no value; they are very rarely discoverable at all; while the heart-beat may be heard in the great majority of cases; they cannot be detected until pregnancy is so far advanced as to be readily recognized by other means, and of course, they do not exist when the child is dead.

Sounds produced by the Movements of the Child, or its Limbs.—These were the first objects connected with pregnancy, sought to be discovered by auscultation; and it was in seeking for them, that M. Mayor, in 1818, recognized the double heart-beats of the child. In 1829 M. Nauche proposed to investigate these motions by his metroscope; and in 1838, H. F. Nægele again called

attention to the same matter; concerning which, it was asserted by both the latter writers, that by the recognition of this phenomenon, pregnancy could be discovered so early as the third month, and before the motions of the child could be recognized, either by the hand of an examiner, or by the woman herself.

The indication here alluded to consists of a slight dull sound, accompanied by a little, sudden jerk, or a gentle sliding motion, which may be felt as well as heard.

It has been already shown that the foetal movements after the fifth month, are, in general, to be recognized without difficulty, by the hand laid on the abdomen; not unfrequently, during that month, and sometimes even before the end of the fourth. At more advanced periods of pregnancy, when the movements of the child, if living, can be so distinctly felt, I cannot imagine any practical benefit to be obtained by seeking to hear sounds, when we can so readily feel by the hand, the movements which produce them.

It seems quite obvious that the hearing of these sounds could only be of real practical value at those earlier periods of pregnancy at which the movements which cause them cannot be ascertained by the hand; at which time, such a variety of circumstances may influence such sounds, or impede their transmission, and prevent their being heard, or alter their character; or, again, they may be simulated by so many accidental sounds independent of pregnancy, that they can have but little positive value as indications of pregnancy. I ought, however, in candor to acknowledge that my investigation of this point at the earlier periods has been more limited than perhaps it ought, or might; at the same time, I have made many such examinations within the first half of the period of pregnancy, and the trials so made were very unsuccessful. But in the hands of others, the results are stated to have been much more satisfactory; thus, Depaul tells us,¹ that of twelve women, who by their own account were at the end of the third month of pregnancy, and had not passed the fourteenth week, he succeeded in hearing these sounds in nine (in one of the other three the child was dead), by renewing the examination on several occasions, and directing the stetho-

¹ *Op. jam cit.*, pp. 392, 393.

scope towards the cavity of the pelvis, the abdominal integuments being in a state of complete relaxation. The sound heard, he says, always seemed to result from a sudden and short contact, produced by a movement of the whole child, in which it struck against some part of the internal surface of the uterus; he adds, that he never observed anything which, he thought, could be fairly attributed to merely partial movements, such as the flexion, or extension of a limb.

To obtain a correct idea of this phenomenon, he suggests that while we listen at the fundus uteri, we should cause ballottement from the vagina; and he says, that the moment the foetus is made to bound upwards, and strikes against the upper part of the uterus, a sound is heard perfectly resembling that ascribed to the voluntary movements of the child.

He attributes to these sounds a great practical value, as certain diagnostic signs of pregnancy, at a period when other means afford only probabilities, and when, as yet, the foetal heart-beats are not discoverable, but with which they have this in common, that if once unequivocally heard, they not only decide the question of pregnancy, but prove also the life of the child.¹

Having thus fully considered the several phenomena connected with pregnancy, discoverable by auscultation, and with some years' additional experience, I feel bound to repeat the opinion which I formerly gave with reference to its application, for the purpose of ascertaining the existence of pregnancy; and must again say, that, without meaning to depreciate its great and acknowledged value, as an *occasional* means of doing so, I am still of opinion that for those who are thoroughly conversant with the proper methods of examining doubtful cases, it will seldom be found necessary, if all the other more ordinary modes have been adopted with sufficient care; that if we inquire carefully, and minutely, into the history of our case, and know how to make good use of our hands and eyes, we will not often require the assistance of our ears.

There are, however, met with in practice many peculiar cases, in which, as I have already strongly insisted on, auscultation may be brought to our assistance with the happiest effect; not

¹ Op. jam cit., p. 394.

only as a means of ascertaining pregnancy, under circumstances in which we could not by any other means succeed, but with several other important objects; as when, in protracted, or anomalous labor, it becomes desirable to determine whether the child still lives, or is becoming weaker; or under other circumstances, such as those of the cases already related, p. 123, *et seq.* The presence of twins may be thus discovered, as may also the position of the child, the situation of the placenta, or the existence of extra uterine pregnancy. But such questions, except the last, are foreign to our present object, and cannot be entertained here, but they will be found fully described in the writings of Kilian,¹ Hohl,² Dubois,³ Kennedy,⁴ Adams,⁵ and Nagle,⁶ and especially in the recent work of Depaul,⁷ in which this whole subject is treated with great care and ability.

Dusky Hue of the Vagina.—Lastly, it remains to notice an evidence of pregnancy proposed by Dr. Kluge, Professor of Midwifery at Berlin, and by M. Jacquemin at Paris, which they declared to be a *sure test* of that condition: this is a bluish tint of the vagina, extending from the os externum to the os uteri. According to Dr. K., this discoloration commences in the fourth week of pregnancy, continues to increase till the time of delivery, and ceases with the lochia. The only condition, he says, likely to vitiate this test, is the existence of hemorrhoids in a very marked degree. Dr. Sommer, who reports this discovery, convinced himself of the presence of this color in pregnant women, under the direction of Professor Kluge. M. Jacquemin, in conducting the examination of the genitals in prostitutes, in compliance with the police regulations at Paris, observed the same peculiarity of color in the same situation in those who were pregnant: he describes it as a violet color, or like lees of wine, and so distinct as never to deceive him, being sufficient of itself, and independently of the

¹ Operations Lehre für Geburtshelfer, in zwei Theilen. Bonn.

² Die geburtshülfliche Exploration. Halle, 1833.

³ Rapport à l'Académie sur une Mémoire de M. Bodson. Arch. Gén de Méd., tom. xxxi. : a full abstract is given by Dr. Paul, p. 32.

⁴ Observations on Obstetric Auscultation, &c., p. 58.

⁵ Dublin Medical Journal, vol. iii. p. 65.

⁶ Lancet, 1830-1, pp. 232, 395, 435, &c., &c.

⁷ Traité Théorique et Pratique D'Auscultation Obstétricale. Paris, 1847.

other signs of pregnancy, to determine the existence of that state. Duchatelet mentions¹ that he was present when M. Jacquemin's accuracy in this matter was put to the test successfully: in the investigation he examined no less than 4500 prostitutes.

In the first edition of this work, published soon after attention was first drawn to this matter, I stated that my experience then, did not enable me to speak decidedly with reference to it, because the opportunities afforded for ocular examination of the vagina in pregnant women, are comparatively rare; and when they do occur, it is almost always on account of some disease of the parts which changes their natural appearance. But I stated that nothing within my observation contradicted the accuracy of the sign under consideration; on the contrary, I found it present, in a greater or less degree, in a few cases which I had recently examined, expressly for the purpose, where pregnancy undoubtedly existed. But I also suggested, that even supposing it to be a constant accompaniment of gestation, as asserted, it is obviously produced by the increased vascular determination, or congestion existing at that time in the genital system, and hence, that we must anticipate the great probability that other forms of vascular congestion independent of pregnancy would cause the part to assume a similar appearance, an expectation which, at that time, appeared to me to be justified by facts; and I referred, in illustration, to the well-known common mode, long in use, of ascertaining whether certain of the lower animals are in a state fit for intercourse with the male, or in heat, as it is called; which is, to examine the orifice and internal surface of the vagina, which, under such circumstances, is found almost inky dark; as we find noticed by Mr. Cruikshank in the following passage of his paper.² "May 30, 1778—I took a female rabbit, hot (as the feeders term it), that is, ready to be impregnated, and disposed to receive the male. This they find out, not by exposing her to the male, but by turning up the tail and inverting part of the vagina: *its orifice and internal surface are then as black as ink, from the great derivation of blood to these parts.*" While, on the other hand, should the ovum be blighted, and the increased activity of the uterine circulation con-

¹ De la Prostitution dans la Ville de Paris, tom. i. pp. 217, 218.

² Experiments to discover the Ova of Rabbits, &c. Philos. Trans. for 1797, p. 199.

sequently cease, this color of the vagina would most probably disappear altogether, or become very imperfect. Since expressing these opinions, my experience on this point has been very ample indeed; and I have seen reason to consider this sign of a far greater positive value than I could venture to allow it at that time: it has also, since then, been examined by others, competent to judge, and I think, with a very general agreement and acknowledgment of its importance.

The justly distinguished Kilian of Bonn, in an introductory chapter prefixed by him to the German translation of this work, which he did me the favor to edit, thus speaks (p. 19) of this sign: "The most striking circumstance in the state of the pregnant genitals is, however, always the bluish, or wine-lees color, which the mucous membrane of the vagina and the external superficies of the vaginal portion (of the uterus) manifest in several places. Our attention has indeed been drawn to this most important sign, gained by dioptrism for pregnancy, by Jacquemin, Ricord, Kluge, Parent-Duchatelet, Lauer, and others; but we believe we only do an act of justice by pointing out Jacquemin as the discoverer. We ourselves have, in later times, devoted greater attention to this appearance, and subscribe with perfect conviction to the view that this phenomenon is scarcely ever wanting, and thus, is one of the most constant signs of pregnancy. In one point only, we are not as yet clear whether it belongs exclusively to pregnancy, or appertains likewise to other states of life. This blue color shows itself most strikingly in the forepart of the upper region of the vagina, and it is more rarely to be met with in the posterior. In solitary cases, we have also distinctly observed it in the vaginal portion; and we think we do not err in asserting, that in those women where the coloring in question is very considerable, dark hair and a notably greater secretion of mucus from the vaginal ducts are to be met with. Considering all circumstances, we cannot do otherwise than recognize in the happy suggestion of this sign, a new and valuable contribution to the diagnosis of pregnancy, and congratulate ourselves that we possess an additional means of clearing up many a difficult case; which, though it may not be sufficient to overcome all doubt, must in no inconsiderable measure, contribute to its removal."

Dr. A. H. Wistrand, of Stockholm, in his "Treatise on the Mode of deciding Medico-Legal Questions connected with Pregnancy and Delivery,"¹ speaks in strong terms of approbation of this sign: the color, he attributes to the hyperæmic congestion, produced in the uterus, and other genital organs, by pregnancy. According to him, it generally begins to be perceptible towards the close of the second month, and becomes more evident during the third and fourth.

"When this change of color takes place," says he, "and is perfectly evident, I regard it to be one of the most important signs for the medical jurist, of the existence of the earlier period of pregnancy (from the 7th to the 15th week), since the majority of the other signs are still more uncertain, a circumstance of which I have myself very often had occasion to be convinced, when on first examining women on their admission into hospital, I have, from observing this livid color in the vulva, extending almost uniformly over nearly the entire of the mucous membrane, assumed, or, at least, suspected the presence of pregnancy; an assumption which was soon confirmed by the progress of the same. However, it can naturally only give probability, more or less strengthened by other phenomena, never perfect certainty, which can only be obtained at a later period of the pregnancy.

"The absence or indistinctness of the change of color under consideration cannot, on the other hand, be at all looked upon as satisfactory evidence of the absence of pregnancy, because it has not, as yet, been so established as to prevent our supposing the possibility of its absence in a pregnant woman, although it certainly was found in all whom I examined:" p. 21. Malvani, Heiberg, and Sperino, consider it a never-failing sign of pregnancy; Huguier declares that it is not found in morbid congestive enlargements of the uterus, or in any other condition than that of pregnancy; while Lange very truly contends that this appearance does not occur in all pregnant women to such a degree, or so plainly, that it can be decidedly distinguished from a somewhat similar change of color, which may depend on some pathological condition of the unimpregnated uterus.

¹ "Afhandling om Sättet att besvara Rättsmedicinska Frågor rörande Håfvandskap och Förlossning." Stockholm, 1849. Dublin Journal of Medical Science, Nov. 1852, p. 447, *et seq.*

I shall now state the results of my own observations on this matter, to which I have for some years paid considerable attention.

The shade of color observable is not accurately expressed by calling it blue, or comparing it to that of the violet, or of port wine; a more correct designation would be, I think, a livid, or dusky hue; it is altogether different from the shade of color seen in ordinary vascular congestion, even when intense, or in cases where there are varicose veins. I believe the nearest approach to it is the color occasionally noticed on the vaginal membrane during menstruation; but this is not a case likely to mislead us. According to Pouillet, the existence of hæmorrhoids will produce this color of the vagina; I have had many opportunities of testing this assertion, and have no hesitation in declaring its inaccuracy.

In the vulva it is most distinct on the inside of the nymphæ, and about the orifice of the urethra, and the clitoris; and the dusky hue becomes more and more strongly marked as we ascend towards the upper end of the vagina and os uteri, where its appearance is often very striking, when the color is but imperfectly developed at the entrance of the vagina.

Even where it is fully developed about the entrance of the vagina, the color is never so deep as that of port wine; but in such a case, the os uteri will present a very dark hue indeed. It is not, however, uniformly or continuously diffused over the whole mucous membrane, but is seen in patches, between which the membrane appears simply congested.

I have not found its perfection at all proportioned to the dark color of the hair, as remarked by Kilian.

I have not seen any instance of its being clearly visible within the first two months; it is frequently not developed until the fourth, or even the fifth month. I have had several opportunities of watching the gradual development of this peculiar color, and of noting the fact that, even in cases where it became strongly marked after the fourth month, it was not visible until after two months of pregnancy had elapsed.

It is sometimes, even at advanced periods, not perceptible at all, and, in some instances, it is so faintly marked, as to be altogether equivocal; and in such cases it ought to have but

little influence on our opinion; because other conditions may cause an appearance so closely resembling this imperfect color, that it would be impossible to draw the distinction. But I have never seen a single instance in which its perfect condition, as observed in healthy pregnancy, was simulated in any other state of the system.

In every instance, without a single exception, in which I have found this appearance distinctly marked, pregnancy coexisted. But pregnancy may exist, and this color may not be visible, either because not developed in the particular case, or because the vital actions of pregnancy have been arrested; for I have had several opportunities of observing its disappearance, when the ovum has been blighted. One very striking instance of this I shall have occasion to relate, in a future section on protracted gestation; the case of Bridget Smith, in whom it was unusually well marked at the fourth month, but at six months, had quite disappeared: the ovum having been, in the meantime, blighted.

My experience, then, justifies me in regarding this peculiar appearance as a very valuable diagnostic indication; liable to this drawback, that it is not available as a general means in practice, a consideration which must of course considerably modify the value of this test; but, nevertheless, should subsequent observations prove that healthy pregnancy is, in the great majority of instances, or even in a very large number, accompanied by such an appearance becoming visible within the first, or second month, the fact would certainly be one of the most important additions ever made to our means of making a correct diagnosis, in cases of early pregnancy; and the more especially, as it would be applicable to a period at which we have no other satisfactory means of discovering the existence of that condition; and might occasionally, under peculiar circumstances, be resorted to with propriety and advantage.

Before leaving this part of our subject, and proceeding to consider other less usual sources of information, a brief summary of the evidence, to which we may refer at different periods of pregnancy, appears desirable.

1st. Should the examination be required before the end of the third month, we have in general, no sign or symptom on which we can place perfect reliance; but our opinion must be formed

from the suppression, or continuance of menstruation, the state of the breasts and areola, sickness of stomach, and state of the os uteri. In a rare instance, quickening may have taken place, the dusky color of the vagina may be developed, or the dark abdominal line may be present; the placental souffle may perhaps be audible, or *possibly* the foetal heart-beat, or the sounds produced by the movements of the child (see pp. 191, 197), or we may be assisted by the detection of some idiosyncrasies of the individual, or by her being conscious of exactly the same sensations as those which had been experienced at a similar period in her former pregnancies.¹ "On the whole," to use the words of Smellie, "the difficulty of distinguishing between obstruction and pregnancy, in the first months, is so great, that we ought to be cautious in giving our opinion, and never prescribe such remedies as may endanger the fruit of the womb; but rather endeavor to palliate the complaints, until time shall discover the nature of the case, and always judge on the charitable side, when life or reputation is at stake."²

2dly. In the fourth or fifth month, in addition to the above points of reference, we seek to detect the increased size of the abdomen, and the uterine tumor, which at this period is generally well defined, and may be felt overtopping the anterior wall of the pelvis; the umbilical depression is beginning to diminish, and the foetal movements have been most probably felt by the mother,

¹ See instances already noticed, pp. 73, 86.—September 14th: a lady pregnant for the third time, whose account of her symptoms was so unusually clear and circumstantial that I could place the utmost reliance on any statement made by her, assured me that she has always been aware of her condition within a very few days after conception, from experiencing a peculiar, and rather unpleasant sensation of thrilling, or fluttering in the iliac region very much resembling what she afterwards felt when quickening. Soon after experiencing this sensation, she has always begun to suffer her usual symptoms of pregnancy, and in about eighteen weeks afterwards quickening took place. Reckoning from the day of that occurrence, her labor always came on *precisely at the end of twenty weeks*; so that, when I first saw her on the day above mentioned, she told me she had quickened on Friday, the 27th of May, and consequently expected to require my attendance on Friday, the 14th of October, in the evening of which day she sent for me, when I found her labor commencing; it went on slowly through the night, and next day, she gave birth to a healthy girl. See another similar instance already noticed, p. 129.

² Midwifery, vol. i. p. 191.

or may be recognized by the hand externally applied; the uterine souffle and foetal heart-beat may be heard; and in most cases, the dusky color of the vagina and the dark abdominal line will be distinctly perceptible, and ballottement is available.

The os uteri is now much changed, as are also the breasts, on which we may expect to find the areola fully formed, and, in some instances, the peculiar mottled appearance, or secondary areola, already described; not unfrequently, a lymph or sero-lactescent fluid is found exuding from the nipple, or the extremity of this part is covered with the little bran-like scales.

3dly. In the sixth and subsequent months, the development of the abdomen, and the size of the uterine tumor, within which we may be able to distinguish different parts of the child's body, the umbilicus raised to the level of the surrounding surface, or projecting above it, the patulous and otherwise greatly altered state of the os uteri and shortened cervix, above which we feel the bulging body of the uterus, and the head of the child lying against its anterior wall, if distinctly recognized, afford proofs which leave no room for doubt, which would, of course, be equally removed, if we detected the phenomena derivable from auscultation.

In investigations of this kind, an invariable rule should be: to collect every possible proof before we venture to pronounce an opinion; not trusting to the evidence of any particular sign or sympathy, however distinct, or whatever may be our faith in its value; but taking all the evidence together, and judging of it collectively and comparatively; except we have *distinctly and unequivocally heard the pulsations of the foetal heart, or felt the child move in utero*, which ought, of course, to be completely decisive of the question.

Should the case be one occurring in an unmarried female, or into which legal considerations enter, whether of a civil or criminal character, and involving property, reputation, or life, *our decision ought to rest on no evidence that admits of doubt*, and if we cannot have such proofs as will rigidly satisfy our judgment, and enable us to decide without hesitation, our uncertainty must be candidly and fearlessly expressed, and our decision postponed until a further lapse of time shall remove the obscurity of the

case; and, in the meantime, no treatment should be adopted which could interfere injuriously with the state of pregnancy.

Rœderer has given a summary of the signs of pregnancy so truthful, and so admirably condensed, that I trust I may be excused if I subjoin it here, in his own words.

“Ex supra dictis sequentia corollaria eliciuntur.”

“Ium. Ante tertium mensem certum graviditatis signum non facile datur. Probabilia tantum criteria sunt: orificii uterini descensus, ventris complanatio, menstruorum suppressio, tumor mammarum, symptomata a suppressione hac, vel a novo stimulo inducta.”

“IIum. A tertio ad quintum mensem, exploratio abdominalis recte instituitur. Ad quam si accedit suppressio menstruum continua, successiva symptomatum morbosorum remissio, mammarum tumor crescens, lympa lacteis striis distincta, orificium uteri crassius, mollius, spongiosum, motus embryonis, &c., de graviditate, admodum certi esse possumus.”

“IIIum. Post quintum mensem, status orificii uterini omnium minime fallit: precedentia recensita signa si continuantur, et augentur, nullum plane graviditatis dubium est reliquum. Simul etiam cervicis tumor tunc tangitur.”

“IVum. Sub initium, mediumque septimi mensis, caput plerumque tactui offertur. Unam, duas, tres, quin quatuor ante partum, hebdomades, uteri ora inferior tenditur, aperturæ pelvis superiori apprimitur et caput pone istam oram hærens pressioni in altum resistit.”—*Elem. Art. Obstet.*, pp. 51, 52.

CHAPTER IX.

EXAMINATION OF SUBSTANCES EXPELLED FROM THE UTERUS.—AN EARLY OVUM.—MOLES.—HYDATIDS.—THE MEMBRANE FORMED IN DYSMENORRHEA, AND IN OTHER CONDITIONS OF UTERINE DERANGEMENT.—MEMBRANOUS FORMATIONS FROM THE VAGINA.

THE expulsion from the uterus of solid, or organized substances, presenting occasionally very unusual, or anomalous characters, excites not unfrequently suspicions of the existence of pregnancy in the unmarried, and perhaps the perfectly chaste. Under such circumstances, we may be applied to for an opinion as to the nature of the substance expelled, and are expected to declare whether it is, or is not, the product of conception; and, inasmuch as the character and fair fame of the individual depend on our answer, the greatest care will be required in making such an examination, and the utmost caution in forming, or pronouncing an opinion. To this duty, no person can possibly be competent, if he have not previously made himself intimately familiar with the appearance and structure of the ovum, particularly in the earlier periods of its growth; and this knowledge, he may take it for granted, he never will attain to, by descriptions in books or plates, nor by any means except repeated examinations of the structure itself, under every circumstance and condition in which it may be found: more especially, when it is altered in its characters, as it usually is, by abortion, or previous intra-uterine lesion.

The substances thus expelled may be, 1, an early ovum; 2, a mole; 3, uterine hydatids; 4, the membrane produced in dysmenorrhœa, or other conditions of uterine derangement; 5, membranous formations from the vagina; to each of which we shall now turn our attention.

1. *An Early Ovum.*—When the product of conception is expelled within the first month, its component structures are often

so crushed and broken up during its expulsion, that the most careful and skilful examination may fail in detecting its true character. After this period, its structure is sufficiently distinct to be recognized by any one well acquainted with it, and who will take *sufficient time* to examine it; for this also is absolutely essential to the formation of a correct opinion. The ovum, when thus expelled, is generally infiltrated with firmly coagulated blood, and the pressure which it sustains, while it is being forced through the contracted and rigid cervix of the uterus, so condenses its texture, as to reduce it apparently to the condition of a solid homogeneous mass.

The real structure of the product so altered cannot be ascertained by any examination instituted at the moment, but must be gradually made out, by first immersing it in water for a day or so, and then by agitation and washing, the coagulated blood must be removed, while with delicate blunt instruments we gently separate the component parts of the mass *under water*, until at length we ascertain its real character. This process may occupy us for a time varying from three or four days to a week, before we are able to satisfy ourselves perfectly. Haste may completely defeat the object of the examination, or, still worse, it may betray us into giving an erroneous opinion, as was done with very sad results in a case in Scotland, which will be noticed more particularly hereafter. (See p. 223.)

If in the progress of such an investigation, we discover a foetus, or even a part of one, it would of course be decisive; but this may not be the case, and yet we may recognize all the other component parts of the ovum, presenting several structures which are never produced by disease.¹

If the ovum is expelled entire, we have the uterine decidua covering the substance under examination, and distinguished by its soft, rich, pulpy appearance, and strong red color; its external, or uterine surface being rough and unequal, and, when well freed from the coagulated blood, and immersed in water, exhibiting numerous small round foramina capable of admitting the head of

¹ See a case related by Mr. Lemon in the *Edinburgh Medical and Surgical Journal*, vol xi. p. 96. The writer has in his museum several specimens illustrative of this absence of the foetus, where the other parts of the ovum exist.

a pin,¹ while its internal surface is smooth, generally thrown into slight, soft folds, and exhibits to the unassisted eye, little or no appearance of foramina, though they are really very numerous, but are not so easily perceptible, being of very minute size. These characters, which are almost always to be recognized without difficulty, are sufficiently distinctive of the structure under consideration; but there is another, not previously noticed by any one, as far as I am aware, until I described it in 1886,² although it is probably one of the most remarkable features in the organization of this peculiar product. Repeated examinations have shown me that there are on the external surface of the decidua vera, a great number of small cup-like elevations, having the appearance of little bags, the bottoms of which are attached to, or embedded in its substance; they then expand or belly out a little, and again grow smaller towards their outer, or uterine end, which in by far the greater number of them, is an open mouth when separated from the uterus: how it may be while they are adherent, I cannot say. Some of them, which I have found more deeply embedded in the decidua, were completely closed sacs. Their form is circular, or very nearly so; they vary in diameter, from a twelfth, to a sixth of an inch, and project about the twelfth of an inch from the surface of the decidua. Altogether, they give one the idea of miniature representations of the suckers of the cuttle-fish.

They are not confined to any one part of the surface of the decidua, but I think I have generally found them most numerous and distinct on those parts of it which were not connected with the capillary rudiments of the placenta, and at the period of gestation which precedes the formation of the latter as a distinct organ: they are best seen about the second or

Fig. 7.



¹ See Hunter's plates of the gravid uterus, xxix., fig. 11, and also plates xxviii., xxx., xxxiii., xxxiv.

² Dublin Journal of Medicine, vol. x. p. 241.

third month, and are not to be found at the advanced periods of gestation.

When originally announcing the discovery of this peculiar apparatus, I said, "I was not prepared to offer any very decided opinion as to the precise nature, or use of these decidual cotyledons, for to that name their form, as well as their situation, appears strictly to entitle them; but from having, on more than one occasion, observed within their cavity a milky, or chylous fluid, I am disposed to consider them reservoirs for nutrient fluids separated from the maternal blood, to be thence absorbed, for the support and development of the ovum. This view seems strengthened, when we consider that at the early periods of gestation, the ovum derives all its support by imbibition, through the connection existing between the decidua and the villous processes covering the outer surface of the chorion," the terminal radicles of which were long since observed to contain, in early pregnancy, a milky fluid, absorbed from the uterine tubuli into which they penetrate; a fact of easy demonstration in some of the lower animals, as in the cow and sheep, from the uterine cotyledons of which this milky fluid can be readily pressed out, as well as from the terminations of the foetal vessels on the chorion. It is, also, quite in accordance with the observations of Weber, Müller, and others, who found that, "if the substance of a pregnant uterus is compressed, a thick whitish fluid exudes upon the surface of the decidua, similar to the secretion which may be expressed from the uterine glands of animals.¹ I think it can hardly now be questioned, that the decidua is no new product, but a part of the mucous membrane of the uterus; or, as Wm. Hunter calls it, "an efflorescence of the internal coat of the uterus itself," "the internal lamella of the uterus,"² and

¹ Müller's Physiology, Trans. by Baly, p. 1574.

² Krummacher, in his *Dissertatio circa Velamenta Ovi Humani*, published in 1790, thus describes the decidua: "Proprie est, membrana uteri interna, quæ post conceptionem, intumescit at crassescit, usque ad tertium circiter graviditatis mensem," &c.; and hence he is, by some, regarded as the first who gave this opinion as to the nature of this structure: but his description seems to me clearly anticipated by William Hunter, as in the passages quoted above, which must have been written by him before the year 1783, and most probably about the year 1774, when his magnificent engravings of the gravid uterus were published.

that these structures, to which I gave the name of "decidual cotyledons," are identical with the uterine glands so ably investigated and described by Dr. Sharpey, the excretory ducts of which opening on the internal surface of the decidua, by the small orifices already noticed, he has found filled with a semi-fluid whitish granular matter.

This outer coat may be found only partially adhering to the ovum, or entirely torn away and separated from it during its expulsion; but in either case, these characters mark the true uterine decidua, and are not found in the products of disease.

Internal to this layer, and immediately investing the transparent membranes of the ovum, is found another, the decidua reflexa, the outer surface of which is smooth, and its inner completely filamentous, receiving the beautiful arborescent villi which cover and shoot from the surface of the chorion, forming the bond of union between it and this inner decidua. The discovery of these arborescent villi alone, is proof positive of the nature of the product, as they are never found presenting like characters, except upon the chorion, or uterine surface of the placenta.

2. *Moles*.—With regard to those organized fleshy masses called moles, which are occasionally expelled from the uterus, there is a great discrepancy in the opinions of writers of authority, some of whom maintain, with Mauriceau,¹ that they are the result of conception alone, and, of course, unequivocal proofs of pregnancy; while others either think this very doubtful, or deny it altogether, and suppose that they are merely accidental formations of a morbid character. "By the term *mole*," says Denman,² "authors have intended to describe very different productions of, or excretions from, the uterus. By some it has been used to signify every kind of fleshy substance, particularly those which are called *polypi*; by others, those only which are the consequence of imperfect conception, when the ovum is in a morbid or decayed state; and by many, which is the most popular opinion, every coagulum of blood which continues long enough in the uterus to assume its form, and to retain only the fibrous part, as it is

¹ "Il est très certain que les femmes n'engendrent pas de moles ni de faux germes, si elles n'ont usé de coït."—*Maladies des Femmes*, tom. i. p. 109. "Massa carnea, vasculosa, ex utero excreta. Ovum deforme."—*Vogel*.

² Introduction to Midwifery, p. 124.

properly called, is denominated a mole." "True moles," says Voigtel,¹ "are distinguished from the false, and from other growths of the uterus, by their not deriving their origin from the substance of the womb or its membrane, but by their being always the consequence of conception." This is at once assuming that conception is the *sine quâ non*, without which a mole cannot exist, an opinion which is supported, to a certain extent at least, by the experience of Mr. Burns, who says: "It is the opinion of many that these substances are never formed in the virgin state, and no case that I have yet met with contradicts the supposition."² Foderé³ thinks that the true mole is always the result of intercourse between the sexes, and that those substances which are discharged from the virgin uterus are merely condensed coagula of blood, which, of course, may form in the chaste as well as in others. Baudelocque⁴ considers the mole and the false conception as one and the same, which is also the opinion of Schmitt⁵ and Dr. Alexander Hamilton.⁶ Herbiniaux lays it down distinctly that a mole is always the result of sexual intercourse (*Traité des Polypes*, p. 55); and Rokitansky assumes, as a matter of course, that all moles are degenerated ova. (*Pathol. Anat.*, vol. ii. p. 345.)

On the other hand, we find the matter thus stated by Dr. Smith: "Moles are disorganized masses that form in the uterus; and continuing for some time to increase, cause some of the symptoms of pregnancy. They have been found in females who never had any intercourse with the other sex."⁷ Ruysch makes a similar assertion, and adds, that he has seen them in women so advanced in years, as to be beyond the reach of suspicion. A case came before the Parliament of Paris in 1781, in which the female sued for damages for seduction. Twenty months after this was alleged to have been committed, she brought forth a mole. The Parliament decided against her, on the score of

¹ Handbuch der Pathologischen Anatomie, vol. iii. p. 501.

² Principles of Midwifery, ed. 7, p. 111.

³ Médecine Legale, vol. i. p. 468.

⁴ Art des Accouchemens, tom. ii. p. 367.

⁵ Critical Introduction, p. 36.

⁶ On Female Complaints, p. 130.

⁷ Principles of Forensic Medicine, p. 298.

character, adding that "the causes of moles were as uncertain as the time of their gestation, and that there were instances of girls, and even of nuns, who had produced moles without any previous criminal connection." Foderé, who quotes this case, disapproves altogether of the view taken by the court,¹ which is also contrary to the writer's experience, which has led him to the conclusion that the true fleshy mole is never found, except in those who have previously indulged in sexual intercourse. "*Nusquam visa est mulier molam sine mare concepisse.*"²

It is to be observed here, that this is a mere question of fact, of which different views have been taken, and opinions formed by authors, or practitioners, according to the opportunities afforded them of judging. The writer does not feel prepared to undertake to reconcile these conflicting opinions, but it appears to him almost certain, that much of the discordance has arisen from substances of very different characters having been indiscriminately classed together, under the general term of moles, some of which were undoubtedly neither more nor less than diseased ova, or remnants of such, while others were as certainly either merely condensed coagula, or perhaps uterine polypi. Hence Mahon³ appears perfectly justified in making the following remarks: "The existence of moles properly so called is extremely doubtful, since they may all be referred to some one or other of the substances of which we have spoken, viz., a placenta which had continued its growth, the foetus having perished; the degenerated remains of the afterbirth; coagulated blood; sarcomatous tumors, or polypi of the uterus. The first two cannot exist, except after sexual intercourse; the other three may be found independently of it.⁴ This is the distinction which it is of the greatest importance to make in questions of legal medicine, that we may not, without cause, compromise the reputation of the unmarried girl, or the widow of irreproachable life and conduct."

In this view, the writer entirely coincides, and thinks the

¹ Médecine Legale, tom. i. p. 478.

² Fernel, tom. i. p. 599.

³ Médecine Legale, tom. i. p. 274.

⁴ "Aussi sont-ce les seules productions que l'on rencontre chez les filles, et chez les femmes vivans dans l'état de chasteté."—*Mad. Boivin, sur la Mole Vesiculaire*, &c., p. 18.

medical jurist would not be justifiable in pronouncing any such mass expelled from the uterus, as proof of pregnancy, except he can detect in it either the foetus, or any part of it, or some other of the component structures of the ovum; and even then, without further proof, "we must not," to use the words of Morgagni,¹ "immediately doubt the woman's chastity, since, as has been said above, the placentula might have remained in the uterus formerly, in an abortion that had not been much taken notice of;" which remark he makes in reference to cases in which portions of placenta appeared to have been a long time retained in utero, from which they were afterwards expelled in the form of moles, when the women were advanced in life, and many years widows;² as happened in the case related by Ambrose Paré,³ in which a mole was retained seventeen years.

In the instances which have come under my immediate observation, the women were all either married, or avowedly indulging in sexual intercourse, and the masses, when examined, were found to contain the product of conception degenerated, or greatly altered by disease. One of these substances, which is preserved in my museum, was expelled from the uterus immediately after the discharge of a healthy ovum, containing a well-formed foetus of four months, at which period of pregnancy, the woman, according to her own account, had arrived. The substance had the external characters usually considered as those of a mole, and was of the form and size of a large orange. When opened, no trace of a foetus could be discovered, but it was lined with the transparent membranes, and there was a small remnant of an umbilical cord, which was ragged at its unattached extremity; the fleshy envelop varied in thickness from an eighth to half an inch, the thickest part being that where the placenta was situated, the internal surface of which exhibited very remarkably the tubercular disease represented in Denman's ninth plate. Morgagni⁴ relates a similar case, and quotes Hartmann and Guttermann. Mr. Lemon's case has been already referred to, p. 210.

This absence of the foetus, where other parts of the ovum are

¹ Epist. xlviii., art. 13.

² See *Mém. de l'Acad. Roy. des Sc.* for 1735; Vallisneri, tom. ii., cit. p. 2, c. ult.

³ *Lib. xxiv.*, chap. xl., xlii., p. 718.

⁴ *Epistles*, 48, 49.

present, is noticed by Voigtel in describing the different species of moles. "In others," he observes, "from an originally imperfect development of the ovum, or an injury to the foetus at its first formation, it appears either as a shapeless mass, or *the foetus itself is completely destroyed, and only its membranes and the placenta* continue to grow, for a time, and get thickened and fleshy, or filled with fluid only, or form membranous, fibrous masses, or hydatids, or assume other unnatural appearances."¹

Some observations on molar gestation have been already made, p. 161, *et seq.*, and the subject will be again adverted to in Chap. XI.

3. *Uterine Hydatids.*—These productions are discharged from the uterus under very distinct forms: either in great numbers, and connected together in bunches of vesicular sacs of a variety of sizes, from that of a pin's head to that of a large grape, or a few of them may be found embedded in the substance of, or attached to an ordinary mole, such as we have been already considering, or they may be found appended to the villi of the chorion of an early ovum, or to the terminal radicles of the placenta: the first group is the only one of these concerning whose necessary connection with previous conception any doubt is likely to arise; and here there exists, as in the case of fleshy moles, a complete want of accordance in the opinions of authors. Some maintain, that they are not necessarily the result of conception, while others as strongly, and, as it appears to me, with much greater reason and truth, consider them as the product of disease attacking the ovum; or, speaking more accurately, as an abnormal state of a certain portion of the ovum, namely, the villi of the chorion.

Without entering into lengthened details on this subject, it appears proper to quote a few of the most respectable opinions on each side of the question, before stating the result of my own experience in the matter. Sir C. M. Clarke² thus expresses himself: "It is probable that the existence of pregnancy is not necessary for the production of this disease. It has been believed to exist independently of this state; and perhaps a morbid condition of organized, coagulating lymph may have the power of

¹ Op. jamjam citato.

² Observations on the Diseases of Females, part ii. p. 115.

originating this disease, under certain circumstances, but what these circumstances are, is not known." Gardien's opinion is, that "hydatids may be met with in girls as well as in women; however, although they are independent of sexual intercourse, they are much more frequently met with in women who have borne children, and especially when they have arrived at the turn of life."¹ Denman says: "These have been supposed to proceed from coagula of blood, or portions of the placenta remaining in the uterus, and this opinion is generally true; but there is sometimes reason for thinking that they are an original production of the uterus independent of such accidental circumstances, and sometimes the precursors of organic disease in that part."² Of these opinions, I think we are justified in saying, that there is so much of conjecture in them, that they weigh very little in the determination of this point; and it is, moreover, to be observed that these writers admit elsewhere, as indeed do all who have written on the subject, that the existence of hydatids in utero is always accompanied by the ordinary symptoms of pregnancy. The weight of authority appears to me very decidedly in favor of the necessary connection between these substances and previous conception. Beck, in his work on Medical Jurisprudence,³ thus expresses himself: "I will repeat again, in this place, what I have before endeavored to prove, by a reference to the best authorities, that there is no case on record, where hydatids of the uterus have been formed *independent of sexual connection*." Baudelocque and Voigtel consider them merely as a variety of the mole, and, as such, the result of impregnation.⁴ Desormeaux thus speaks of them: "It is superfluous to say, that the development of these masses of hydatids is most frequently, if not always, the result of conception: at first, it is impossible to distinguish this affection from pregnancy, *or, to speak more correctly, pregnancy exists with all its phenomena*, and it is impossible to discover when the degeneration into hydatids takes place."⁵ Velpeau is perhaps even more decisive on the point: his words are, "The mole and hydatids of the uterus, being but the products of

¹ *Traité complet*, &c., tom i. p. 559.

² *Introduction to Midwifery*, 5th ed., p. 121.

³ Fifth ed., p. 165.

⁴ *Locis citatis*.

⁵ Article "Euf humain," *Dict. de Méd.*, tom. xv. p. 387.

conception degenerated, give rise to the same phenomena as true pregnancy."¹ "This, therefore," says Morgagni,² speaking of the true mole, "cannot exist in virgins, nor, as far as I know, that, in like manner which might with more propriety be called a *mola vesicularis*—I mean a congeries of vesicles disposed after the manner of a cluster of grapes." Rokitansky includes vesicular moles with the other kinds, as degenerations of the ovum.³

I shall quote only one other authority, to which, however, I attach very considerable value. Madame Boivin has published a very ingenious and satisfactory pamphlet⁴ expressly on this subject, and brings forward a vast quantity of information connected with this affection, which she appears to have studied with unusual attention; and the result of her observations she announces to be, that hydatids in the uterus are, in all cases, the result of conception.⁵ She notices the fact, that these formations are surrounded by an investing membrane having all the characters of the *decidua vera*; and she maintains that the hydatids originate in the filamentous processes springing from the external surface of the transparent membranes of the ovum; in regard to both which points, I coincide in her views, and have in my museum several preparations showing both facts: one of these (No. 596), I wish particularly to refer to, as being of great beauty and value. I attended a lady who miscarried in the third month; the ovum came away enveloped in the *decidua reflexa*, which was torn in the process of expulsion, and disclosed several small bunches of hydatids depending from the villi of the chorion, thus: at first, one or two hydatids sprung from a single, fine, thread-like stalk: then from each of these, one or two more, and so on, until, at length, a long bunch of hydatids is formed, hanging down from the chorion by the original delicate stalk: there was no foetus discoverable. I shall have occasion to allude to this case again, in a future chapter, on account of a peculiar symptom which existed in it.

¹ *Traité Elem. de l'Art des Accouch.*, tom i. p. 217.

² *Epist.* xlviii., art. 13.

³ *Op. jam cit.*, *ibid.*

⁴ *Nouvelles Recherches sur l'Origine, la Nature, et la Traitement de la Mole Vesiculaire, ou Grossesse Hydatique*, 1827.

⁵ *Vide pp.* 15, 24, and 56, *op. cit.*

A case, in which the hemorrhage accompanying uterine hydatids proved fatal, occurred a few years since, in the lying-in-hospital in this city; the particulars of which are fully related in the excellent work of Drs. Hardy and M'Clintock, p. 233. The woman was four months pregnant, but the uterus attained the size of six months, and was unusually firm:¹ no audible indications of pregnancy could be discovered: when examined after death, the substance of the uterus was nearly half an inch in thickness, the mass of hydatids was found surrounded by two layers of decidua, the vera and reflexa, to the latter of which the hydatids intimately adhered: no other component structure of an ovum could be detected, but in one of the ovaries there was a most perfect, and large sized corpus luteum, presenting a central cavity large enough to hold a split pea, and all the other characters that belong to it, when accompanying ordinary true pregnancy. I am indebted to the kindness of Dr. Johnson, then master of the hospital, for the possession of a section of this ovary, which had been successfully injected. This corpus luteum will be again more particularly referred to.

My own belief, then, is that uterine hydatids do not occur except after sexual intercourse, and as a consequence of impregnation; never having met, or heard of a case, in which their presence was not accompanied, or preceded, by the usual symptoms of pregnancy.² In every instance under my immediate observation, the women supposed themselves with child, and when the contents of the uterus were expelled, there was found either a blighted foetus, or some other part of the ovum; and in the case just related, there was the perfect corpus luteum of pregnancy.

Still it must be confessed, that our knowledge on this point is by no means sufficiently precise, nor our collection of facts sufficiently extended, to warrant us in pronouncing positively on the question, or asserting decidedly, in a case of suspicion, that a woman was pregnant, merely because she discharged hydatids from the uterus, except we could detect, along with them, some constituent part of the ovum, or, in an examination after death, find in the ovary the true corpus luteum, which ought to put an

¹ See observations on Molar Gestation at p. 161, *et seq.*

² Such also was the experience of Dr. Gooch. See Account of the Diseases of Women, &c., pp. 242, 243.

end to all doubt. It would be presumptuous and absurd to maintain that, because we had always found them in connection with one particular cause, there *might not* be some other also capable of producing them; and as there may be a doubt, we must let the accused have the benefit of that doubt.

Again, in giving an opinion, we should be prepared to make allowance for such a case as this: a woman loses her husband by death, or departure, when she is, perhaps, in the third or fourth month of pregnancy; shortly after, she miscarries, and the placenta, or some other portion of the ovum, is retained, and gives rise to the production of hydatids. This new product may be retained for some time, and being afterwards expelled, might very unjustly excite suspicion against a perfectly chaste person; for, although the result of impregnation, in such a case, it would obviously be no proof of a pregnancy occurring subsequently to the absence of the husband; such a contingency has been already noticed, pp. 107, 108.

It is now desirable to inquire: how long may such formations be retained in utero before their expulsion? In the cases which came immediately under the writer's own observation, the collections of true uterine hydatids were not, in any instance, retained beyond seven months and a half; but, in one case of fleshy hydatid mole, it was apparently retained for twelve months, and in another, certainly for ten.

In Madame Boivin's work, p. 74, there is a table, showing the number of months which intervened in thirty-two cases, between the commencement of pregnancy and the expulsion of the hydatids; from which it appears that, while in some instances they were expelled at three months, and in one case not until fourteen months, the average period was between six and seven.

Instances of much longer delay in their expulsion than in any above referred to have been recorded by others. Morgagni¹ says: "Nor are examples wanting of a long continued dropsy being solved by a very great number of hydatids discharged from the uterus." Lossius² speaks of a widow who had the abdomen enlarged for more than five years before her death; on examina-

¹ Epist. xlviii., art. 13.

² Obs. Med., lib. iv. obs. 16.

tion, the uterus was found distended with hydatids. Percy, Lître, Jolly, Baudelocque, and Madame Boivin relate instances of the expulsion of hydatids from the uterus at ten, eleven, twelve and a half, and fourteen months after conception; and Dr. Ryan¹ says he knew a case of hydatids continue for fourteen years, after which time, several pints of them were discharged, mixed with purulent matter.

Gardien,² Desormeaux,³ and Velpeau,⁴ agree in admitting that they may be retained in utero many years; but I have not myself met with any such case, and I must say I entertain great doubts of the accuracy of such statements. I shall have occasion to relate a case of hydatids, in which the occurrence of hæmoptysis caused much doubt as to the real nature of the case.

I may observe here, that hydatids have been occasionally found accompanying an otherwise healthy pregnancy;⁵ one instance of which is deserving of notice, as connected with an individual who was afterwards highly distinguished as an anatomist and physiologist. A lady, four or five months pregnant, expelled a quantity of uterine hydatids, and subsequently, at the proper time, gave birth to a living child, who was afterwards the celebrated Beclard. (See hereafter Dr. Ingleby's case.)

That hydatids have been mistaken for ova, appears sufficiently proved by the relation of cases in which women were said to have miscarried of several conceptions; as, for instance, in one case where the attendant reported that the lady had miscarried of seventeen ova; but any one who has ever seen uterine hydatids could scarcely commit such an error, or indeed confound them with anything else: their immense numbers, their varying size, from that of a pin's head to that of a large grape, or a walnut; their connection with each other in bunches, by fine thread-like pedicles, and the absence from their external surface of the flocculent villi peculiar to the chorion, effectually distinguish them from an early ovum. I was once urgently summoned to see a patient who was said to have miscarried of a bull-frog,

¹ Manual of Midwifery, 3d ed., p. 297.

² *Traité des Accouchemens*, tom. i. p. 559.

³ *Dict. de Méd.*, tom. xv. p. 388.

⁴ *Traité des Accouchemens*, tom. i. p. 417.

⁵ See Perfect's Cases, vol. i. pp. 251, 254.

and the matter appeared to the attendants put beyond all doubt, by its being enveloped in a mass of *frog spawn*: on my arrival I found a stunted and deformed foetus, of about four months, lying in a basin full of uterine hydatids about as large as peas, and certainly very much resembling the substance previously described to me: when hydatids are thrown into a basin of water there is generally blood enough to color the water, and the appearance is happily described by Dr. Gooch¹ as like "white currants floating in red-currant juice." Some observations on the diagnosis of hydatid pregnancy will be made in the section on the combination of gestation with disease: for the present, I shall only add a passage from Morgagni, as deserving of great attention: his words are, "that neither of these kinds of molæ (the fleshy, or the vesicular) are produced without a preceding conception, *and neither of them certainly by untouched and pure virgins*, that I remember to have read. There is, beyond a doubt, need of the greatest skilfulness and diligence in examining; nor less prudence in pronouncing, if at any time a woman, who is said to have abstained herself from man, should discharge a body from the uterus, which at first sight might seem to belong to one or the other kind; lest it should perhaps not be a placenta, but a mere concretion of blood, or some excrescence which bore a resemblance to flesh, or the vesicles, whereof I have spoken."²

A case which occurred in Scotland some years ago, affords a striking illustration of the necessity of great caution in forming an opinion, and still more in communicating it, under circumstances such as we have just been considering. The case alluded to has been so incorrectly related by several, that I think it right to subjoin the late Dr. James Hamilton's account of it, as communicated by him to me.

"A lady in the highest society here, the mother of a large family, was suddenly affected during the night with intermittent uterine pains accompanied with hemorrhagy from the vagina. My father's attendance was requested, but being engaged, a message was sent to the celebrated Dr. —, the ordinary physician

¹ Diseases of Females, p. 244.

² Epist. xlviii., art. 13. Some interesting cases are detailed by Nauche in a well written article on this subject. See *Maladies propres aux Femmes*, partie i. p. 182.

of the family. He declined obeying the summons, upon the obvious principle that the case was out of his department; but he deputed a gentleman then anxious to practise midwifery, who reported, after attending the patient, that she had been relieved of a false conception. Dr. — the next morning waited on the husband of this lady, and jocularly congratulated him upon his health and vigor. This joke, however, was very ill received, for the parties had not been together for two years; and the lady had not quite attained her fiftieth year. A separation of the parties was the consequence."

4. *Membranes expelled in Dysmenorrhœa and other Conditions of Uterine Derangement.*—The circumstances attending dysmenorrhœa have sometimes given rise to a suspicion of pregnancy and early abortion; because the female may have pains resembling those of labor, accompanied by red discharge, and followed by the expulsion of a substance somewhat resembling the decidual covering of an ovum. But it only requires a proper examination, and inquiry into circumstances, to detect the difference between these two products, and to determine the real nature of the case. In the first place, then, we may learn that such occurrences are habitual with the person at every menstrual period, or at least frequently; the symptoms of pregnancy have not been observed, nor does the state of the breasts correspond to the existence of that condition. Secondly, the substance expelled, in such cases, will be found deficient in several of the characters of the true decidua; for although the result of an action in the uterus analogous to, if not identical with, that by which its inner surface is converted into the decidual nidamentum (see p. 212) for the reception and support of the ovum, it differs therefrom in two essential points; first, that it is a morbid product; and secondly, that not being intended, like the true decidua, to become an organ, or at least a medium, of nutrition for the ovum, it is not furnished with a structure such as would only be required for the performance of such an office; hence, it is thin, flimsy, and less substantial in its texture, devoid of the soft, rich, pulpy appearance, deep vascular color, and numerous well developed utricular follicles, or crypts, and foramina for the reception of the nutrient vessels from the uterus, which are always so distinctly observable in the true decidua, which however in one

point it resembles, having its inner surface smooth, and the outer unequal, but of a ragged shreddy appearance, unlike that of the healthy uterine decidua, and it is, moreover, entirely destitute of the little cotyledonous sacculi already described (p. 211) as an essential character in the latter structure.¹ In texture, it more nearly resembles that of the reflexa, than any other structure; but no trace of the transparent membranes of the ovum can be discovered within it, or attached to it, and should it happen to come away entire, in the form of a hollow triangular bag, we never find within it a duplicature of itself forming an inner pouch, or reflex layer with its outer surface smooth and its inner rough, as in the case of the natural decidual envelops of the ovum. Morgagni has given a very accurate account of this accidental product, as it occurred in the case of a noble matron of his country, who expelled it almost every month, with pains like those of childbirth, having its external surface "unequal and not without many filaments that seemed to have been broken off from the parts to which they had adhered; but internally hollow, on which surface it was smooth and moist, as if from an aqueous humor which it had before contained."²

In far the greater number of instances, this membranous structure is ejected by women who either are at the time, or have been, affected with dysmenorrhœa, which distinction it appears necessary to make, because I have seen cases in which women who had got apparently quite well of that complaint, have afterwards expelled these anomalous formations, and that, too, under circumstances which led to a strong belief that they were miscarriage; the menses having been suppressed, for two or three periods, and some of the mammary sympathies experienced. It should also be observed that the same thing has occurred to women who had not been at any time habitually affected with dysmenorrhœa; but in whom, owing to accidental circumstances, suppression and other equivocal symptoms of pregnancy have preceded the expulsion of the membrane. This has been most frequently observed in married women who have remained

¹ See also Dublin Medical Journal for Nov., 1836, p. 241.

² Epist. xlviii., art. 12.

barren; but sometimes, also, this membrane has been ejected, for two or three periods after parturition, and then entirely ceased.¹

Under such conditions of functional derangement in the uterus, especially when the excitement is of an inflammatory character, women occasionally expel solid substances of a fibrous appearance externally, and varying in size from that of a fig to that of an almond, which they resemble in form, being in fact moulded to the shape of the uterine cavity. These substances, when cut into, are found to consist either of a condensed coagulum of blood only, and then are homogeneous, or nearly so, throughout; or some of them consist of layers of coagulum, between which there is interposed a thin, membranous-looking stratum of lymph; and others, again, are a combination of coagulated blood with the membranous production first described, around which blood is effused and condensed before its expulsion from the uterus, in which case, when a section is made through the centre of the mass, it is found to consist of an outer coat of condensed coagulum lined by the membrane, the smooth surface of which is thus laid open.²

A case is described by Mad. Boivin, in which a similarly formed tumor was expelled from the uterus, but turned inside out, so that the smooth surface of the membrane was its external covering; this might happen, as she supposes, by the upper part of it having been the first detached from the fundus uteri by blood insinuating itself between the two surfaces, and forcing the adventitious sac inwards and downwards, until it was at last completely introverted, and of course its surfaces reversed.³ We shall probably be correct in referring such productions to any cause capable of exciting a certain degree of irritation, or perhaps of inflammation, by which a thin lamella of the lining membrane of the uterus may be cast off, or lymph poured out on its surface, which assumes a membranous texture, as we find happen in other hollow organs lined with a mucous membrane, as, for instance, in the intestines in cases of diarrhœa tubularis, and in the trachea and air-tubes; to use the words of Pouchet, "*Ce n'est qu'une*

¹ See Denman's Introduction, p. 163.

² For a good representation of such a formation, see Dr. Granville's Illustrations of Abortion, pl. xi., fig. 5.

³ See *Maladies de l'Uterus*, &c., tom. ii. p. 419, and Atlas, pl. xix., figs. 3, 4.

desquamation de sa superficie, analogue à celle qui se produit à la surface des autres muqueuses, mais plus intense;"¹ and hence, we the more readily acquiesce in the belief that such concretions may form quite independently of the specific stimulus of conception, or of sexual intercourse, an opinion which is sanctioned by the experience of the best authorities. In the case related by Morgagni,² while the lady, by his advice, lived *absque marito*, the membrane was expelled every month, but on her return to her husband's bed, she conceived. Dr. Blundell says he is satisfied that the disease may occur in women of undoubted honor.³ Desormeaux considers its production referable to accidental causes independent of intercourse;⁴ and lastly, Denman, who of all the moderns has best described this membranous formation, thus expresses himself:—

"As the first cases in which this membrane was discharged were those of married women, a doubt arose in my mind whether it was not really a consequence of early conception; but I have lately had the most undoubted proofs that it is sometimes discharged by unmarried women, and may be formed previous to, and without connubial communication; and that the uterus has, occasionally, or constantly, in some women, the property of forming it at, or in the interval between, the periods of the menstrual discharges. It seems particularly necessary to establish this fact, as the appearance of this membrane has more than once given rise to erroneous opinions and unjust aspersions. Nor is this the only circumstance in which some women, at each period of menstruation, have symptoms like those which accompany pregnancy or parturition."⁵

There is no room for doubt, that the product thrown out in many cases of dysmenorrhœa is, like the true decidua of pregnancy, the lining mucous membrane of the uterus exfoliated and cast off, as pointed out by Dr. Simpson; but it is, in my opinion, equally indubitable that, in many other instances, of which I have seen a great many, it is no more than a layer of coagulable lymph

¹ Sur l'Ovulation Spontanée, p. 254.

² Loco jam citato.

³ Diseases of Females, p. 260.

⁴ Dict. de Méd., tom. xxi. pp. 115, 116.

⁵ Introduction, pp. 161, 162.

partially organized, or uterine epithelium, as happens also, in many cases of ordinary healthy menstruation.¹ (See p. 153.)

5. *Accidental Membranous Formations expelled from the Vagina.*

—Since formerly writing these observations, I have met with some cases in which membranous formations were expelled from the vagina, some of which might, on a hasty or careless examination, be mistaken for portions of the ovum; which was really the case in the first instance in which I was consulted about one of these products, which had been expelled some hours before I saw it.

It was then of a silvery, or light pearl color inclining to lilac, but had had hardly any color when expelled: it was apparently membranous, hollow, open at one end, and closed at the other, about three inches in length; and as it was in some places a little broken, and perforated here and there, by small openings, a second membrane could be seen within, which, on dividing the outer one, was found to line the latter throughout, but was not adherent to it; within this inner coat, there was a small quantity of a matter resembling condensed mucus, or soft areolar tissue; but there was no trace of a foetus or cord, nor of the villi of the chorion. At first, I confess, I for a moment suspected that I was looking at the chorion and amnion of an ovum; and the loose shreddy matter within the inner coat, I thought might be the villi of the chorion morbidly altered, the membranes themselves being ruptured and turned inside out, as I had often seen happen; but on the other hand, a moment's consideration showed me that it could not be the natural membranes of the ovum, with their relative position reversed, because the inner one, which would in that case be the chorion, was smaller than the outer or amnion, which could not be.

While examining this substance at a window, under a strong bright light, I observed that it was quickly changing its color to a light purple, and in some parts a brown; it at once occurred to me that the whole product might have been formed by the action of nitrate of silver on the mucus and epithelium of the vagina; and on asking the medical attendant if the lady had been using any kind of vaginal injection, I was told that she had for some

¹ See Pouchet, *op. cit.*, p. 254.

weeks used one of nitrate of silver, for the cure of leucorrhœa. This I thought satisfactorily accounted for the production under examination; the mucus and epithelium of the vagina had been, in the first instance, condensed by the action of the nitrate of silver, so as to form a membranous layer, and on its separation from the surface of that canal, a fresh layer had again been produced outside the former, and so inclosing it. These pseudo-membranes were of sufficient consistence and strength to admit of being suspended by threads in the usual way, and put up in spirit, as they still remain in my museum, where they have now been for about fourteen years.

Still more recently, I was consulted by an unmarried lady, affected with a most distressingly severe form of hysterical neuralgia, presenting all sorts of symptoms, and simulating all sorts of diseases; a very remarkable feature in the case was the almost daily formation and expulsion, with considerable pain, of membranous casts of the vagina. They were quite transparent, of a light straw color, like that of goldbeater's leaf, about two and a half inches long, hollow, the cavity about an inch in diameter, closed at one end, and open at the other; of these, she had preserved in spirits more than three dozen bottles full, of which she gave me three, containing about a dozen of these casts, which I have preserved; their texture was quite firm enough to bear free handling and examination, and altogether one of them might, very readily indeed, have been mistaken for a portion of the transparent membranes of the ovum.

CHAPTER X.

ACCIDENTAL CIRCUMSTANCES.—IDIOSYNCRASIES.—BECCARIA'S
TEST.—STATE OF THE BLOOD, URINE, AND PULSE.

UNDER this head, it is intended merely to notice certain peculiarities sometimes observable in pregnant women, which, although generally deserving but little attention in such an investigation, may still be remembered with advantage on account of the con-

stancy with which they occur in particular individuals, and the assistance which they may consequently afford in confirming or modifying our opinion in an unusually obscure case; when it is prudent to avail ourselves of every advantage which a knowledge of the collateral circumstances can afford. In such cases, I quite agree with Schmitt in thinking that every phenomenon which has a claim to be regarded as a sign of pregnancy, however problematical may be its semeiotic value, ought to be taken into account to assist us in arriving even at a probable conclusion. In a first pregnancy; such a means of judging might not be available; but in the case of a woman who, having been several times pregnant, and having each time experienced certain peculiar affections, whether of a moral or physical character, is again conscious of a repetition of the same sensations, or the return of some particular physical sign with equivocal symptoms of pregnancy, the coincidence should not be disregarded, even although the accidental peculiarity should happen to be trifling in its nature,¹ or apparently unconnected with any action or sympathy likely to be induced by pregnancy. As a striking instance of this, I may select the case of the wife of an esteemed medical friend, who, on every return of menstruation, or pregnancy, displayed on her right shoulder a bright pink streak, which immediately disappeared on the termination of these conditions of her system, and was never seen at other times. Dr. Harvey mentioned to me the case of a lady who, whenever she was pregnant, became affected with the most uncontrollable passion for building; this, he assures me, has taken place several times, and always subsided when pregnancy ceased.

Of the more common accidental changes accompanying pregnancy, may be noticed the alteration so often observed to take place in the features and expression of the face, which has been made a subject of remark since the days of Hippocrates, who mentions it, and which some of the French writers,² not unhappily, term a decomposition of the features, which become sharper, especially the nose, which seems as if it were lengthened, and the

¹ "Quam quidem nonnullæ ita callent, ut ex quibusvis, levioribus quandoque, quin rarioribus, mutationibus certa conceptionis factæ signa petere norint."—*Roderer, Elem. Art. Obstet.*, § 143.

² See Gardien, tom. i. p. 485.

mouth appears larger; the eyes are sunk, and often surrounded with a brownish or livid areola, and assume a languid expression; the whole body emaciates, except the breasts and abdomen, which grow proportionally fuller.

A marked change in the temper is very commonly observed also, so that a woman who was, under ordinary circumstances, extremely mild and sweet tempered, immediately becomes, when pregnant, irritable and capricious, an effect which has been already alluded to, p. 41, and notice taken of the fact, that in some women each recurrence of pregnancy is accompanied by some degree of mental disturbance. In some, drowsiness to a great degree is a constant attendant on pregnancy, so that they cannot remain quiet for a short time without falling into a doze. The patient, from whom Mr. A. Hunter removed the inverted uterus by excision, is mentioned as having had, "during gestation, a great tendency to sleep; which was often so excessive, that notwithstanding all her exertions, she could not keep herself awake."¹ Another case has been mentioned (p. 86), in which the same affection was one of the earliest intimations which the woman had of her pregnancy in several successive instances.

I have met with several instances of women who declared that increase of appetite, even to a troublesome degree, was among the indications by which they knew they were pregnant; and sometimes this was most keenly felt at the most unseasonable and inconvenient hours. In one instance, I was consulted by the husband of a lady who was then on a visit near this city, and was in the habit of awaking at two o'clock in the morning so ravenously hungry, that he was on several occasions obliged to make his way to the larder, to procure some animal food for her.

Strange appetites, or longings, as they are called, and antipathies, are well known as frequent attendants on pregnancy in many persons; some of whom will long to eat unusual, and even revolting articles, while others, immediately after conception, are seized with an unconquerable aversion to species of food which were previously particularly agreeable to them. I have seen several well-marked instances of this, and in particular one, in

¹ *Annals of Medicine* for 1799, p. 366.

the case of a lady who assured me, that she always knew when she was with child, by feeling a violent antipathy to wine¹ and tea, which at other times she took with pleasure. I had an opportunity of observing the accuracy of this indication, in three successive pregnancies of the lady alluded to. A patient of Dr. Dewees² used to consume enormous quantities of chalk, when pregnant; and Capuron knew a woman whose principal food was long pepper, which she used to swallow by handfuls;³ under the same circumstances, one patient of mine eats quantities of cloves, for the first three or four months; and another indulges with equal freedom in eating dry oatmeal.

There is a curious and interesting coincidence between such facts as these, and others not unfrequently observed in certain states of uterine disturbance, connected with suppressed, or deranged menstruation: especially about the time when that function is first established; when it is not unusual to find girls eat with avidity the most uninviting substances, such as cinders, dry mortar, or clay; and in a case, about which I was some time ago consulted, the young lady used to pick the bog-wood out of the grates and eat it.

This morbid state of the appetite did not escape the notice of Ben Johnson, who thus alludes to it:³—

“She can cranch

A sack of small coal, eat you lime and hair,
Soap, ashes, loam, and has a dainty spice
Of the green sickness.”

Such caprices of appetite may at first, perhaps, only excite a smile, but experience appears to have sufficiently shown that their indulgence cannot always be permitted without imminent risk of injury to the mother, or child, or both: thus, Dr. Merri-man relates the case of a young woman who, during her first pregnancy, took a fancy to chew ginger, of which she consumed several pounds; her child was born small and meagre; its skin was discolored and rough, much resembling the furfuraceous desquamation that follows scarlatina; it lived in ill health a few

¹ This particular aversion is expressly noticed by Hippocrates as a sign of pregnancy: “Vinum odio habent, cibos aversantur.”—*De Infecundis*, cap. 6.

² *Traité des Accouchemens*, p. 42.

³ *The Magnetic Lady*, act i. sc. 1.

weeks, and then died. The fancy for ginger did not return in her subsequent pregnancies, and she gave birth to vigorous and healthy children. In a second case, indulgence in large quantities of gin and water was followed by the birth of a child, which he describes as small and lanky, with a weak voice, its face wrinkled and ghastly, and its belly collapsed: its skin was mahogany colored, and hung in folds all over the body, there being no muscular fulness to keep it distended; it lived in much suffering for about ten days, and then died in convulsions.¹ The writer some years since attended, with Dr. Evanson and Dr. Alcock, the post-mortem examination of a child which had lived only nine weeks; at birth, an unusual fulness was observed about the perineum and anus, which increased rapidly, until these parts became greatly protruded, and a tumor was formed of the size of a very large orange; convulsions came on, and the child died after much suffering. The tumor, on examination, was a perfect specimen of fungus hæmatodes, and the earliest instance of the disease then known to the writer. In this case, the mother had indulged, during all the time of her pregnancy, in continually eating brown paper; she had done the same in her former pregnancy, which was her first, and the child was stillborn, under a foot presentation. I cannot, of course, undertake to assert that there was certainly a connection between the effect observed in the child and the depraved appetite of the mother; but the fact appeared to me sufficiently remarkable to be noticed (see p. 38); and I quite agree with Dr. Merriman, that these cases tend to prove, what no man, who has had opportunities of observation, has ever doubted, that the popular doctrine is false and indefensible, which teaches that pregnant women should be "allowed to indulge all the capriciousness and wanton absurdities of their appetites;" it being most certain, that however safe and uninjurious some of the articles of diet longed for may be, others cannot be taken without danger of hurting either the mother or the child.

On the other hand, however, if a pregnant woman takes a fancy to some unusual article of diet, of a kind not likely to be injurious to her, it would be better to let her gratify the whim:

¹ Merriman's Synopsis, &c., p. 320.

because the want of the indulgence not unfrequently excites nervous apprehensions of consequences, which, although altogether improbable, may yet render her anxious and unhappy.

Notice has been already taken of the pigmentary depositions which so constantly take place as the result of pregnancy, in the areola, middle line of the abdomen, &c.; and owing to the same cause, there occurs in some women the development of dark blotches over the face and other parts of the skin, of which I have seen many instances, sometimes to the great annoyance of the subject of them. I am in the habit of attending a lady of rank, who took very ill indeed, the appearance on her forehead and nose, of two streaks exactly resembling the marks that would be made by two very dirty fingers drawn along those parts: and Dr. Harty informed me of the case of a lady, who, in her first pregnancy, observed brownish spots, or patches on the sides of the forehead and temples, which she at first mistook for accidental soils on the skin; but they remained permanent; and when she became pregnant again, a further addition was made to them; so that, after several pregnancies, the dark marks extended so far down each side of the face, that the lady was obliged to dress her hair in such a way as to cover them. The most remarkable circumstance in this case was the permanence of the marks, which almost always disappear after delivery. Lecat relates the case of a woman whose face, in three successive pregnancies, became quite black.¹ Camper observed the same circumstance.

The occurrence of salivation, epiphora, and coryza, in consequence of pregnancy, has been already noticed (pp. 91, 93), as has also the return of diabetes mellitus, in several successive pregnancies of the same individual (see p. 53): pains in the teeth, face, and other situations, are, with some, the invariable accompaniments of pregnancy.

Some women always have varicose veins during gestation, who are not subject to such an affection at any other time. Under such circumstances, especially if the woman appears in good health, and otherwise unaffected with any complaint likely to induce such a condition of the veins, their varicose state appears to the writer not unworthy of consideration as a diagnostic sign.

¹ See other instances by Gardien, tom. i. p. 485.

Some women are much troubled with frightful dreams whenever they are pregnant. Dr. Lowder used to relate the case of a lady who was obliged to have a nurse sitting at her bedside all night, to watch her countenance while she slept, and to awaken her as soon as she perceived her exhibiting distress, under the influence of her dreamy terrors. Disorder of the alimentary canal, disturbing the already irritated nervous system, is, probably, the most frequent cause of this affection: it may also be induced by irregular, or undue circulation of blood in the brain; relief has been obtained by acting on such a presumption, administering aperients, and detracting blood by cupping on the nape of the neck.

According to Dr. Beccaria there is a peculiar kind of headache accompanying pregnancy, which he describes¹ as an acute pulsating pain in the occipital region; occupying particularly the part in which Gall places the organ of the instinct of reproduction: this pain, he says, is accompanied with giddiness on the least motion of the head, and with difficulty in supporting the light; it comes on suddenly, and, continuing for some time, is succeeded by an inclination to sleep; after sleeping some minutes, the patient is said to awake free from the pain, and with a strong desire for food. This pain, he says, returns at nearly the same hour, for about eight days, and often disappears without the use of any remedy. This symptom, according to Dr. B., commonly appears unaccompanied by the signs usually laid down as denoting pregnancy, previous to the fourth month; and he observed it in women who were not aware of their pregnancy, and who did not even suspect the fact. Dr. Alexander Hamilton, also, enumerates headache² amongst the early signs of pregnancy immediately consequent on the suppression of the menses: but headache, in whatever form occurring, may be produced by such a variety of causes, connected with derangements of the nervous or uterine system, or of the alimentary canal, that, except under very peculiar circumstances, its occurrence could hardly be made available as an assistance to our judgment.

I have met with many instances of women who were affected

¹ *Annali Universali di Med.*, Sept., 1830. *Archives Générales de Médecine*, tom. xxiv. p. 443.

² *On Female Complaints*, p. 121, ed. 4th, 1797.

with faintness, or even actual fainting, at certain times of the day, whenever they were pregnant, but not at other times; and I may make the same remark regarding hæmoptysis, of which I have met several instances happening only during gestation, and which had so occurred in several successive pregnancies; one very remarkable case of this kind, that of Mrs. McG., I shall have occasion to relate in Chapter XI.; and very recently, I was consulted by a lady to whom it had occurred in three successive pregnancies, and on no other occasion.

From the character of these occasional phenomena it must follow, as already observed, that, in first pregnancies, we can gain little or no information from such accidental peculiarities, but their constant occurrence, in successive instances, ought to give them value in our eyes; the degree of value, however, must depend altogether on the distinctness with which we can ascertain their existence, or the reliance which we can place on the sincerity and accuracy of observation of those who report them to us, and if we are satisfied on both these points, it will be prudent not to reject lightly, or undervalue the evidence derivable from such sources. "That we may not, therefore," says Morgagni,¹ "take a true pregnancy for a false one, we must have a peculiar regard to the signs that are not present, as well as to those that are; and above all, if the woman has been pregnant before, we must consider whether the signs from which she judges herself to be pregnant now, are the same that had preceded in the beginning, at other times. For, by reason of this circumstance being despised, which is sometimes fallacious, indeed, but not to be neglected for that reason, I have seen physicians fall into error," &c. I would wish to observe, here, that this suggestion is by no means to be restricted in its application to the consideration of peculiar or unusual signs, but should be adopted as a general principle in the investigation of all cases,² of which those related by Morgagni, in proof of the above remark, are highly interesting illustrations. But, at the same time, we should be equally careful not to run into an opposite extreme, and exclude the idea of pregnancy because the existing symptoms happen to differ, however widely, from those that have been usually experienced

¹ Epist. xlviii., art. 4.

² See p. 123.

by the woman; the necessity for such caution is abundantly evident from some of the cases already related (see pp. 106, 119), and is also strikingly enforced by the details of Schmitt's 22d case, 2d division.

The Blood, Urine, and Pulse.—It is very generally asserted that the blood of pregnant women *always* presents the buffy coat, and other characters of inflammation,¹ and this change in that fluid is even noticed by authors as one among the rational evidences of pregnancy.² The very general belief in this as an established fact, has probably arisen from the circumstance that pregnant women are seldom bled, except when laboring under some form of inflammatory disease; but experience has fully shown that no reliance whatever can be placed on this condition of the blood as an evidence of pregnancy. It is quite obvious that a woman exhibiting many of the symptoms of pregnancy, and yet not with child, may have her system under the influence of inflammatory action, sufficient to cause the appearance of the blood frequently noticed in pregnancy; and, on the other hand, the blood of pregnant women will be very often found, not presenting the pseudo-inflammatory characters supposed to be peculiar to it. This I have seen proved in several instances, and perfectly recollect the first case which particularly arrested my attention on this point; it was that of a very fat and robust woman, who was seized with puerperal convulsions, and her blood exhibited not the least trace of inflammatory character. I have also observed the same absence of such an appearance in blood drawn in the earlier periods of gestation, to prevent abortion; but, in making this remark, I must add that, at those periods, that is, up to the third or fourth month, the blood will be found, in many instances, presenting modified characters of inflammation; especially in those whose pulse is much accelerated, or who are of a full habit, or sanguine temperament; but if this be asserted as a general rule, applying to every period of gestation, the exceptions will be found very numerous indeed; a remarkable instance of which was formerly noticed by the writer, in the case of a lady in the ninth

¹ Burns's Principles of Midwifery, p. 208, ed. 7th. Denman, ed. 5th, p. 220. Blackall on Dropsies, pp. 279, 280. Scudamore on the Blood, p. 148.

² Gardien, vol. i. p. 487. Blundell's Principles of Obstetrics, p. 167.

month of pregnancy, whom it was judged expedient to bleed, for a very distressing cough, accompanied with pain in the chest, and great irritation of the bladder; the abstraction of blood gave her the most immediate and decided relief, but it appeared in every respect perfectly natural and healthy. "The popular notion," says Dr. Maunsell, "that the blood is always buffed during pregnancy, is, according to my opinion (founded upon numerous observations), merely a popular fallacy."¹

The state of the blood in pregnancy has been, of late years, made the subject of minute examination and analysis, by some very distinguished investigators; the results of whose observations I shall here give briefly.

M. Andral, in conjunction with M. Gavarret, analyzed the blood of thirty-four pregnant women, and found that from the first to the end of the sixth month, the quantity of the fibrin is always below the physiological mean of 3: the mean proportion of the fibrin during these six months having been 2.5, its minimum 1.9, and its maximum 2.9. But during the last three months of pregnancy, the mean of the fibrin was found above the physiological standard; it approached ⁴4, and presented a maximum of 4.8. In the last month of pregnancy, the increase of the fibrin appeared to have attained its greatest amount, the mean having been 4.3.

To this increase of the fibrin, along with the diminution of the globules, he ascribes the occasional occurrence of the buffy coat on the blood of pregnant females. The diminution of the globules is so general, that among the thirty-four females, he found these bodies to range between 120 and 95 in twenty-six cases; and between 125 and 120 in six others.

"The blood then," he says, "manifests a remarkable tendency to assume the character of the blood of inflammation; and, without doubt, we have to reflect on the relation which may exist between the kind of modification which the blood then undergoes, and the development of those special accidents, generally of an inflammatory appearance, which so often affect women recently delivered. Ought we to regard the slight excess of fibrin which

¹ Dublin Practice of Midwifery, p. 68.

in them exists in the blood, as a predisposing cause of these accidents?"¹

These distinguished pathologists have also recorded some interesting analyses of the blood of breeding animals, which was found to present considerable differences before, and after delivery.

Animals.	Fibrin.	Blood Corpuscles.	Residue of Serum.	Water.
Sheep, 36 hours before delivery	2.3	95.0	81.7	821.0
" 66 " after delivery .	3.0	106.2	78.2	812.6
" 24 " before delivery	2.9	92.9	84.5	819.7
" 72 " after delivery .	3.5	102.6	86.3	807.6
Cow, 5 days before delivery	3.7	90.9	75.2	830.2
" 2 " after delivery .	5.1	98.8	73.7	822.4 ¹

Simon gives the analysis of the blood of a woman in her fifth month of pregnancy. "It formed," he says, "a slight buffy coat, that otherwise differed in no respects, physically, from normal blood."

It was composed of

Water	806.898
Solid constituents	193.102
Fibrin	2.102
Fat	3.040
Albumen	72.200
Hæmato-globulin	96.900
Extractive matters and salts	7.980

The chief point of difference between this and normal blood is that, in this case, the amount of solid constituents is somewhat below the standard. The proportion of the hæmato-globulin to the albumen is normal, the quantity of fat is rather increased.²

Becquerel and Rodier analyzed the blood of nine pregnant women, viz., one at the fourth month, five at the fifth month, one at five months and a half, one at six months, and one at seven months; and from their analyses, they conclude that pregnancy

¹ Essai d'Hematologie Pathologique, p. 104.

² Simon, Animal Chemistry, vol. i. p. 342.

³ Op. jam cit., vol. i. p. 336; for the sake of comparison, see his Analysis of the blood of a healthy non-pregnant woman, *ibid.*, p. 228.

exercises a marked influence on the composition of the blood. The density, both of the defibrinated blood, and of the serum, is diminished, the water, the fibrin, and the phosphorized fat are increased, while the corpuscles and the albumen are diminished.

M. Caseaux read a paper at the Paris Medical Society, the object of which was to show "that hydræmia or serous polyæmia, is the most frequent cause of the functional disturbances in advanced pregnancy, usually attributed to plethora;" the blood of pregnant women differing from that of chlorosis only by containing an increased quantity of fibrin. On this occasion, M. Jacquemier stated, that he had examined the blood of about 200 women, in the eighth and ninth months of pregnancy, and the so-called inflammatory crust was not met with so often as is usually supposed; but occurred much oftener in winter (when many of the women labored under bronchitis and influenza) than in summer, when it was met with only once in six or even in nine, cases. (See remark already made, p. 237.)

The diminution of globules is, according to him, infinitely greater in a chlorotic person than in a pregnant woman; all the analogy that can be traced between the two conditions may be stated in the fact, that a considerable number of women, after the middle period of pregnancy, exhibit the commencement of anæmia. Among many hundreds of women auscultated at the Maternité, during the last two months of pregnancy, M. Jacquemier only met with the carotid souffle in two or three;¹ but this writer, as has been already noticed (p. 178), asserts that in so large a proportion of pregnant women as one fourth, there may be heard a bruit de souffle accompanying the first sound of the heart; and this he attributes to the altered state of the blood.²

The discovery of casein in the blood during lactation, will be noticed in the next section. (See p. 251.)

Rokitansky, in his recent work on Pathology, speaking of the colorless globules of the blood, says that they are increased in pregnancy, with, or (when in moderate quantity) without, contemporaneous preponderance of the red corpuscles.³

State of the Urine.—For a very long time, there has prevailed

¹ *Revue Méd.*, 1851.

² *Manuel des Accouchemens*, tom. i. p. 209.

³ *Lehrbuch der Pathol. Anat.*, Wien, 1855, p. 373.

a popular belief that the urine of pregnant women undergoes some change; in consequence of which, it presents certain characters from which the existence of pregnancy might be inferred; and, if we may rely on the accuracy of M. Eguisier, it would appear that Rhazes in the ninth century, and Avicenna in the tenth, described "the white cloud, the central deposit, and the minute bodies ascending and descending" (which of late years have received so much consideration), not, however, as signs absolutely indicative of pregnancy, but as generally attending it.

In the work of Savonarola, published in 1498, there is given a minute detail of the changes which the urine undergoes, in the different periods of pregnancy; up to about the sixth month, according to this writer, "the urine is clear, and of a pale citrine color, with a cloud on its surface; and about the middle of the fluid, a deposit like carded wool, but as pregnancy advances towards its close, the urine becomes redder, and turbid when stirred." Foderé notices this condition of the urine, and thinks it entitled to consideration, having, as he says, "verified the accuracy of the observation."¹ Salmon, a writer of the seventeenth century, gives the following account of the matter: "In a healthful woman's urine, if it be troubled a little, and green or blue, with things like thin bran swimming in it, or like starch, which, after settling, make a thick sediment like toosed wool, she is with child." And again: "In a woman with child, and in health, the sediment is like carded wool, and there are little things in it about the bigness of hemp-seed, and sometimes infinitely smaller, and sometimes much greater, and more white than ordinary sediment."²

But, it was only since the commencement of the present century, that this question has assumed anything of the character of a scientific discussion, and been made the subject of direct experiment by chemists and pathologists of competent acquirements.

In 1831, M. Nauche announced³ the discovery of a product found in the urine of pregnant women after the first month of

¹ Méd. Leg., tom. i. p. 435.

² Synopsis Medicinæ, London, 1679, lib. ii. pp. 259, 264.

³ In the *Lancette Française*.

gestation, and which is separated from the other elements of that fluid, by rest alone. To this product, he gave the name of kiestein; which should be written kyestein.¹

If the urine, he says, be exposed for a few days, in a glass, the kiestein shows itself on the surface in the form of specks and oblong filaments, which unite into a scum, or pellicle, of a line in thickness. A portion of this sinks to the bottom of the vessel, and forms there a whitish deposit of a milky appearance; the rest remains on the surface, adheres to the sides of the glass, and is converted into a solid membraniform substance. The pellicle thus formed, he considers a certain indication of pregnancy, almost from its commencement, if the woman is healthy.

After M. Nauche, M. Eguisier published, in 1839, an account of the pellicle, as observed by himself. He says: "From the second to the sixth day, small opaque bodies are seen rising from the bottom to the surface of the liquid; and these, aggregating by degrees, form a layer which covers the entire surface: this is the kiestein. It has sufficient consistency to admit of being lifted up with some care, by its edges. It is whitish, opaline, and somewhat granulated, and may well be compared to the fatty scum of cool broth." He considered it an invariable attendant on pregnancy.²

Dr. Elisha K. Kane has given a very full account of this peculiar product,³ and the results of numerous examinations and experiments made by him on the subject; apparently with great care, and impartiality.

He says, the examination of the first group of cases satisfied him that the urine, during pregnancy, assumes appearances different from those witnessed under other circumstances, and which he was therefore disposed to regard as characteristic of that state. Subsequent inquiries confirmed him in the general accuracy of this opinion, but compelled him, at the same time, to admit its liability to exception.

He concludes, that kyestein does not appear sooner than thirty

¹ From *kyeste*, pregnancy, and *kyestis*, a covering.

² "Les urines coulent plus abondamment, se chargent d'un nuée, et déposent davantage."—*Velpeau, Traité des Accouchemens*, tom. i. p. 178. See also Capuron, *des Accouchemens*, p. 43.

³ *American Journal of the Medical Sciences*, July, 1842.

hours, and sometimes as late as the eighth day; that, on its first appearance, it forms a scarcely perceptible membrane, which gradually becomes firmer and thicker, and after a time breaks up, the fragments sinking to the bottom: about the fifth day it presents a continuous scum of an opaline, white, or creamy appearance, with a slight tinge of yellow, which gradually becomes deeper and more decided. The uniformity of this color is, however, generally broken by granulated spots of a clearer white, giving it a dotted or roughened aspect. The crystals of the forming stage now appear like shining points, and there were sometimes found numerous small brownish specks, sprinkled over the surface, not unlike the gratings of nutmeg. It is at this period, he says, that the pellicle may be compared to "the fatty scum of cooled broth." The cheesy odor, so much insisted on by some, Dr. Kane found only in a very small proportion of cases, and he says that Drs. McPheeters and Perry failed to detect it, in any of the twenty-seven cases examined by them; but he found it "*unequivocally developed in at least three cases, in which pregnancy did not exist.*"

Of 85 cases of pregnancy, in which he examined the urine, 68 gave a well marked kyesteinic pellicle, 11 a pellicle under a modified form, but capable of being recognized, and 6 gave no pellicle whatever. Dr. Kane convinced himself that the occurrence of kyestein was independent of the presence of albumen; that it is "*by no means peculiar to pregnancy,*" for he found it perfect in 44 cases out of 94, of women nursing their children; and in phthisis, arthritis, metastatic abscesses, vesical catarrh, and uterine tumors, pellicles were observed having an amount of "resemblance to the kyesteinic which might readily mislead the unpractised."

In conclusion, he does not regard kyestein as an unerring test of pregnancy, because it is found under other conditions, and is not always observable in pregnancy: again, because it is not always distinguishable from other pellicles which form on the urine.

He sums up with the following general conclusions:—

1. "That the kyestein is not peculiar to pregnancy, but may occur whenever the lacteal elements are secreted, without a free discharge of the mammæ.

2. "That though sometimes obscurely developed, and occasionally stimulated by other pellicles, it is generally distinguishable from all others.
3. "That where pregnancy is possible, the exhibition of a clearly defined kysteinic pellicle, is one of the least equivocal proofs of that condition.
4. "That when this pellicle is not found, in the more advanced stages of supposed pregnancy, if the female be otherwise healthy, the probabilities are as twenty to one that the opinion is incorrect."

I will only remark on these conclusions, that they not only do not legitimately follow from the previous experimental researches and statements, but are at variance with them.

Dr. Stark, in an elaborate paper on the signs of pregnancy,¹ refers to the kysteinic pellicle, which he supposes to be derived from the suspended sediment; and he thinks that there exists a relative proportion between these and the earthy salts which enter into the composition of the urine. He found that this natural sediment of the urine of pregnancy, whether held in solution by the recent urine, or when it had assumed the form of a deposit, or when disengaged by ether, was composed of distinct transparent, or pellucid globules, which had a striking resemblance to the serous, or albuminous globule, but which, in their sedimentary state, had an equally strong resemblance to the caseous globule of recent milk. This substance he distinguishes from albumen, caseum, fibrin, and gelatine; from albumen, because it is soluble in water, on the application of heat; from caseum, in being soluble in nitric and sulphuric acids; from fibrin, it has necessarily a still greater difference; from gelatine, in being precipitated from its solution in water, on cooling, and though partially precipitated by tannin, the precipitate was soluble in water on boiling.

On these grounds, he considers that this substance, to which he gives the name of *gravidine*, is "a matter *sui generis*, an elementary substance, or principle, forming in some measure a connecting link between the albuminous and gelatinous elementary principles."

¹ Edinburgh Med. and Surg. Journ., January, 1842.

Dr. Golding Bird objects to giving to this matter the name of *gravidine*, and thinks "we are not justified in considering it as constituting a new organic principle."¹ Dr. Kane also does not think the distinctive characters of the new substance very decidedly marked.²

Simon examined the urine in the second, third, fourth, fifth, and sixth months of pregnancy; but did not invariably detect kyestein; and after detailing the proceedings adopted, and the appearances observed, he says: "It results from the above observations, that kyestein is not a new and distinct substance, but a protein-compound, whose formation is undoubtedly and closely connected with the lacteal secretion. From the observations of Kane and myself, it seems to follow, that pregnancy may exist without the occurrence of kyestein in urine: if, however, there is a probability, or possibility of pregnancy, and kyestein is found in the urine, then the probability is reduced almost to a certainty. We are unable to draw any positive inferences respecting the stage of pregnancy from the appearance of the kyestein."

He thus proceeds: "Every urine left to itself, forms a pellicle, more or less resembling that of kyestein. If formed soon after the urine is discharged, it consists of earthy phosphates, which, from the urine being alkaline, are, for the most part, precipitated, but likewise form a delicate film on the surface. When this is the case, the pellicle is very thin, and readily sinks to the bottom. Under the microscope, crystals of ammoniaco-magnesian phosphate and an amorphous matter, very similar to kyestein, but consisting of phosphate of lime, are observed: this, likewise, differs from kyestein, in being soluble in free acids. A pellicle of fat on the surface of urine may sometimes be mistaken for kyestein; films of this nature are very thin, and usually iridescent, and the microscope reveals the presence of numerous fat globules."

"The membrane formed on the surface of urine, six or eight days after emission, usually consists of a species of mould; under the microscope, there may be seen innumerable filaments, matted together, and interspersed with sporules."

¹ On Urinary Deposits, 4th ed., p. 379.

² Op. jam cit., p. 38.

Lastly, he remarks: "I once observed a pellicle on the surface of a man's urine, three days after emission, *which, both in chemical and microscopical characters presented the closest analogy to kyestein.*"¹

A similar appearance has been observed by Prout, in the urine of a delicate child, fed chiefly on milk;² and also by Dr. Peddie.³

Lehmann frequently examined the urine of a pregnant woman, from the second to the seventh month. It was of a dirty yellow color, and more inclined to froth than usual; it generally became turbid in from two to six hours; but the morning urine, after standing for thirty-six or forty-eight hours, was always covered with a grayish-white film; which often, in two or three days, sank and mixed with the sediment that formed when the turbidity appeared, but sometimes, was a longer period before it broke up. By means of ether, he could always remove from this film a considerable quantity of viscid fat, which formed a soap with potash, and then, on the addition of sulphuric acid, developed a well-marked odor of butyric acid. From this, and other experiments, he concludes, as does also Simon, that the kyestein of Nauche is not a new and distinct substance, but a mixture of butyraceous fat, phosphate of magnesia, and a protein-compound very similar to casein.⁴

More recently, he has stated that "it is owing to the mucus it (the urine of women) contains that it sometimes froths and becomes covered with a pellicle (kyestein), consisting of ammoniaco-magnesian phosphate and of cryptogames, and which was formerly regarded as peculiar to the urine of pregnant women."⁵

Dr. Rees⁶ has also detected genuine fat globules precisely like those found in milk.

Möller relates two cases in which the urine of women who were not pregnant was covered with a film, exactly resembling kyestein. In one case, there was considerable hypertrophy of the uterus; in the other, no affection of the generative organs could be detected. The film of kyestein consists, according to his observations, of fat, earthy phosphate, and a caseous matter,

¹ Animal Chemistry, vol. ii. pp. 331, 332, Day's Translation.

² On Stomach and Renal Diseases, 4th ed., p. 555, note.

³ Edinburgh Monthly Journal of Med. Sci., Aug., 1848, pp. 74, 75.

⁴ Lehrbuch, der Physiologischen Chemie, vol. i. p. 252.

⁵ Précis de Chim. Physiol. Anim., Paris, 1855, p. 241.

⁶ Analysis of Blood and Urine, 2d ed., p. 217.

which differs, however, from the casein of milk, in being held in solution by a free acid.

In a case of decided pregnancy no kyestein was formed during the period of a severe cold, attended with a copious deposition of urates; but when the urine became natural, the kyestein re-appeared. He twice detected cholesterin in kyestein.¹

Dr. Mikschick has been led by the examination of the urine of fifty pregnant women to the conclusion that the presence of kyestein in the urine *is but of little value as a sign of pregnancy*. He found that in the majority of cases, an opalescent membrane formed on the surface of the urine, after it had been allowed to stand for several days; but the same appearance was observed in many other instances independent of either lactation or pregnancy.²

Kleybolte examined the urine in ten cases of pregnancy, and invariably found kyestein on the fifth day. The morning secretion was used, and after being slightly covered, to protect it from dust, was allowed to stand, at an ordinary temperature, for ten days. The following appearances were observed in the tenth week of pregnancy: urine peculiarly yellow, with a greenish tint; second day, mucous sediment; third day no change; fourth day, turbidity ascending from the bottom; fifth day, white points and leaflets on the surface, turbidity ascending from all parts of the bottom, and the sediment almost gone; sixth day, kyestein distinctly observed on the surface, like lumps of fat on the surface of cold broth; seventh day, no change; from the eighth to the tenth day the kyestein disappears, the turbidity again descends, and the sediment noticed on the second day is reproduced. The nine other cases are in most respects similar to the above.³

Audouard's researches contain little of interest except that in six instances, in which he examined the urine of young women laboring under amenorrhœa, he found kyestein in five.⁴

Becquerel⁵ premises that during pregnancy the general state of the system is liable to great variations, and that the urine in con-

¹ Casper's Wochenschrift, January 11, 18, 1845.

² Oesterr. Med. Jahrb., Dec., 1845.

³ Casper's Wochenschrift, April 26, 1845.

⁴ Journal de Chimie Méd., Mai, 1845.

⁵ Semeiotique des Urines.

sequence, undergoes changes of corresponding importance. If good health is enjoyed during gestation, the urine remains normal; but if anything should happen to excite the vascular system, it readily alters and becomes dark-colored, acid, sedimentary, and diminished in quantity. He says that during the latter stages of pregnancy, the urine often assumes the anæmic type, that is to say, it becomes pale, contains only a small amount of solid residue, and the specific gravity does not exceed 1011. He objects to the accuracy of M. Donné's observations, to be referred to presently, and, without absolutely denying the existence of kyestein, he discredits it.

In consequence of the discrepancy of opinion prevailing among observers, as to the value to be attached to the appearance of kyestein in the urine, as a diagnostic of pregnancy, Dr. Veit, during a year and a half, conducted a series of experiments at the Halle Lying-in Institution.

For this purpose he examined the urine of ten men, of four non-pregnant females, and of forty-eight women in various stages of pregnancy.

He comes to the same conclusion as Höfle, and more recently Lehmann, viz., that the so-called pellicle of kyestein *is no peculiar matter at all; and is not of the slightest value as a sign of pregnancy.*

In the urine of both non-pregnant and pregnant women, he says, pellicles are formed containing vibriones, and frequently the triple phosphate; the chief difference between the respective urines being, that in that of the pregnant woman, alkaline reaction more frequently manifests itself, while in the non-pregnant, the reaction is acid.

This may, he thinks, in some measure depend upon the greater concentration of the urine in pregnancy, and the larger proportion of mucus mixed with it, as a consequence of the changes induced in the condition of the mucous membrane of the bladder, by the passive hyperæmia of that organ during pregnancy.

Persons partaking of a more nitrogenous diet than did the poor pregnant women, whose urine was examined, might furnish different results in this respect.¹

¹ Brit. and For. Med. Review, Oct., 1851, p. 551.

Wistrand, in his excellent "Treatise on the Mode of Deciding Medico-legal Questions in reference to Pregnancy and Delivery," already referred to (p. 203), sums up his account of kyestein, by declaring that "it has not the least value as a sign of pregnancy:" (p. 35.)

Among British authors, Dr. Golding Bird has given the fullest account of this matter with which I am acquainted.¹ He states that he obtained specimens of the urine of "about thirty women, in the third to the last month of pregnancy, and in every case, with but three exceptions, copious fat-like pellicles were observed after two or three days' exposure. The three women, whose cases thus appeared to be exceptions to the general rule, were all affected with inflammatory fever accompanying severe catarrh. Their urine was turbid with urate of ammonia. On the disappearance of the latter, by the convalescence of the patients, the phenomena characteristic of pregnancy appeared."

None of the specimens of urine voided by pregnant women, examined by him, were coagulable by heat, nitric acid, or, with two or three exceptions, by acetic acid, and therefore could not contain any considerable portion of albuminous or caseous matter.

Having procured some of the fat-like pellicle, he placed it under a microscope, and myriads of triangular prisms of triple phosphate were seen, embedded in a mass of granular matter, mixed with which might here and there be seen patches of fat globules.

He says that when the urine is kept so long that the pellicle begins to break up, it falls in the form of a deposit, to the bottom of the vessel; which deposit is found to present the same appearance as the pellicle, except that the crystals are much more numerous, and all the animal matter present is entirely composed of amorphous granules, all trace of anything like a regular structure being lost.

In one of the cases which he examined, a dense pellicle evolved so powerful an odor of putrefying cheese, that he was obliged to throw it away; and he observes that this odor is by no means unfrequent in those specimens of urine, in which the pellicle is very thick.

¹ Urinary Deposits, &c., 4th ed., p. 371.

He thinks it extremely probable that the kysteinic pellicle, characteristic of the presence of certain elements of milk in the urine, may be met with in the urine of nurses, but says he never met with an instance of the kind; but we have already seen that Dr. Kane found it in forty-four cases out of ninety-four, of women suckling their children, and similar facts have been observed by others.

There are few products, he says, formed during repose in urine, which can be readily confounded with this caseous pellicle; if it be borne in mind that the secretion remains faintly acid up to the moment of the crust breaking up. Which phenomenon seems to depend upon the development of ammonia in the urine, as, at that time, it acquires distinct alkaline properties. The crust of earthy phosphates which forms on the surface of all urine by long repose, cannot be mistaken for the pellicle under consideration, which is destroyed by putrefaction, which produces the other.

He says, if it be granted that we possess sufficient evidence of the presence of certain ingredients of the milk, as an imperfect caseous matter, and abundance of earthy phosphates in the urine of pregnant women, it might be suggested as a probable explanation, that during utero-gestation certain ingredients of the milk are eliminated from the blood by the mammary glands, and as is very well known, often accumulate in the breasts in sufficient abundance to escape from the nipple on pressing it between the fingers. This imperfectly formed secretion, not having a ready exit by the mammæ, is taken up into the circulating mass, is separated by the kidneys, and eventually escapes from the body by the urine; which view, he adds, is distinctly in accordance with what we find occurring under certain circumstances in the bile when the biliary ducts are obstructed.

He thinks that it is not known how soon after conception, the urine assumes the properties characteristic of pregnancy; he mentions, but with considerable doubt, a case in which it was supposed that pregnancy was only of two months' date, in which the urine yielded a well-marked pellicle.

As a test for the existence of pregnancy, he thinks the formation of the caseous pellicle, especially if accompanied by a cheese-like odor, will be an extremely valuable *corroborative* indication;

but that it would be unsafe to found on it alone any positive opinion; because, as a sufficient number of observations have not been made on this subject, we have no right to assume, however probable it may be, that a caseous pellicle can appear *only* when pregnancy exists.

Dr. Peddie, in the very valuable paper already referred to (p. 116), says that he has fully satisfied himself with the aid of the microscope, that the kyestein "contains some of the elements of milk, the largest amount of which is probably caseous matter mixed with crystals of the triple phosphate of magnesia. That the milk," he adds, "should be thus changed in appearance, if the theory given above (*i. e.* Dr. Bird's) is correct, is not surprising, on account of the process which it must go through, before its elimination can take place. As a contrast to this, I have given a representation also of the change produced on milk after absorption from the alimentary canal, and excretion by the urinary apparatus. It is the greasy pellicle of an infant's urine allowed to settle for fifty-eight hours, and observed by the microscope. The child was deriving its sole nourishment from the breast, and was in the possession of perfect health."

MM. Grullot and Leblance lately announced the discovery of casein in the blood during lactation; they examined the serum of the blood from two nurses. After coagulating the albumen by heat, and separating it by filtration, they found that the addition of acetic acid produced an abundant precipitate of casein. The quantity of this substance present seemed to bear a direct ratio to the proportion of albumen in the blood. "These observations," says Dr. Bird, "render the excretion of casein by the kidneys, in accordance with the law of Wöhler, at least a probable circumstance."¹

It should be recollected that we do not, as yet, know exactly at what period this peculiar principle, when recognized at all, first begins to appear in the urine. Dr. Bird speaks doubtfully of its existence, in a case of two months' pregnancy; Nauche says, after the first month; Simon says he met with it in the second month; M. Tanchon says he found it in women who had only passed one menstrual period; and Kane saw it once before the fourth, and once before the fifth week.

¹ Op. cit., p. 380.

Having thus noticed the investigations and opinions of several competent authorities on this subject, I have to add, that my own examinations of the matter have not afforded me any satisfactory result: in some of the specimens of urine, from cases of undoubted pregnancy, the peculiar changes did not present themselves; in other cases, where pregnancy did not exist, appearances were observed, so like those supposed to indicate that state, that I confess I could not discriminate between them. Then, as to the cheesy odor, on which so much stress is laid by some observers, it was not perceptible in several of the cases examined by me; although the other changes were distinct. Dr. E. Kane, says he found it present only in a very small proportion of cases, seven out of eighty-five; or if the ninety-four cases in his second table are to be reckoned, seven in 179: and he says it was unequivocally developed in three cases in which pregnancy did not exist: he also adds, that in the twenty-seven cases examined by Drs. McPheeters and Perry, it could not be detected in any.

In the preceding account of this matter, taken from many sources, we have seen that there are several conditions of the system (and there may be several others besides those already noticed) which may prevent the formation, modify the characters, or conceal the existence of kyestein in women really pregnant; while on the other hand, kyesteinic formations have been found in several states altogether distinct from gestation. Dr. Bird found, that in some instances suckling, and in others fever accompanying severe catarrh, during their continuance, prevented the formation of kyestein in pregnant women; the latter observation was also made by Möller. Dr. Kane found the kyesteinic pellicle more or less perfectly simulated, in the urine of women affected with phthisis, arthritis, metastatic abscess, vesical catarrh and uterine tumors; and in six out of eighty-five cases of pregnant women, he says, there was "no pellicle whatever." Simon did not invariably find it in pregnancy, and he observed in the urine of a man a pellicle, "which, both in chemical and microscopical characters, presented the closest analogy to kyestein;" and similar appearances were noticed by Dr. Prout, and also by Dr. Peddie, in the urine of children fed on milk.

Möller found "a film exactly resembling kyestein" in two non-pregnant women, one of whom had hypertrophy of the uterus;

and in several instances, in which I examined the albuminous urine of pregnant women affected with considerable œdema, the kyesteinic pellicle either did not appear at all, or was so greatly modified as to be valueless as a means of diagnosis.

Considering, then, these numerous exceptions on both sides of the question, observed by competent persons, and the many modifications which the urine undergoes, in consequence of changes in the general health, attributable to a variety of causes exclusive of disease, I think we should be very slow to place any confidence in such a sign as the one in question, beyond regarding it, when well marked, as having some value as "a *corroborative* indication;" and even if it were proved that there was a constant relation between the formation of kyestein and the existence of pregnancy, a mode of diagnosis which requires the use of the microscope, and from three to six or eight days, to make the necessary observations, could never be used generally, or satisfactorily in the daily exigencies of practice.

Before leaving this part of our subject, I may observe that pregnancy has been found to produce other special influences on the action of the kidneys and their secretion; a case has been already referred to (p. 53), in which diabetes occurred in three successive pregnancies, and did not exist at other times; and Rayer has noticed albuminous urine in several cases of pregnancy not complicated with disease. M. Donné suspected that the salts of lime were diminished during pregnancy, and that a part of them was taken up to supply the materials for the formation of the foetal bone; and he found, in many experiments instituted for this purpose, that, by the addition of thirty parts of hydrochloride of lime to fifty parts of urine, there was a precipitate of from forty to fifty parts of salts of lime in common urine, whereas, in that of pregnancy, the most he ever detected was thirty, and very often not near so much. Before making the experiment, the urine to be tried must be tested, to ascertain if it be alkaline or acid, and if acid, a few drops of ammonia must be added to render it alkaline, since the precipitate from phosphate of lime is soluble in weak acids.

If the experiment be made with solution of baryta, there will be, in healthy urine, a precipitate of from twelve to fifteen parts of salts of baryta; in the pregnant, from five to eight, after twelve

hours' rest. Out of thirty-six cases of doubtful pregnancy, thus investigated, Donné says he was only deceived twice; Lubaniski found it decisive in three cases, in which manual examination and auscultation proved unavailing.¹

State of the Pulse.—The state of the pulse in pregnant women has been made the subject of remark since the days of Galen. Indeed, if we are to credit the records of history, the ancients attained to a discrimination in this matter, which, I apprehend, we can hardly hope to equal: such, we are told, was the tact of Erasistratus, that he discovered that Antiochus was in love with his step-mother, Stratonice, by merely feeling his pulse; and even in the last century, sphygmie semeiology, as it has been termed, made high pretensions, and, according to the subtle refinements of Fouquet, each separate organ of the body, when disturbed, had its own peculiar modification of the pulse; while others professed that, from the same source, they could discover, not only the existence of pregnancy, but the period to which it had advanced, and *the sex of the child*. But, while we smile at such extravagant notions, we must anticipate no less astonishment on the part of succeeding ages, when they find a writer of the present day, gravely asserting that the rapidity of the pulse and the progress of labor observe a constant ratio; so that, knowing the rate of the former, we may at once assign the state of the latter; and, accordingly, the author in question has constructed tables of reference, on which, *mirabile dictu*, we can read off the point at which a labor has arrived, by referring to the number which expresses the rate of the pulse at the time; as we would other correspondents, on a scale of equivalents.

I believe, all that may be justly said on the subject is, that in many pregnant women, especially during the earlier periods of gestation, the pulse is apt to be somewhat stronger, and quicker than is natural to the individual at other times;² but we cannot tell, in a particular instance, what may be the exciting cause of the increased action; we cannot even be sure that it is not natural

¹ Annales d'Obstetrique, &c., 1842.

² "Frequent et très-variable pendant la grossesse."—*Rochoux*. "Les seuls caractères constans que j'aie observés dans le pouls sont la fréquence et la vivacité, souvent avec de la plénitude et de la dureté."—*Desormeaux*. See also Burns, p. 212.

to the person; and at all events, we are certain that there are a thousand circumstances of disease or accident which may equally produce it.

Vaginal Pulse.—Under this designation, Dr. Oslander,¹ of Göttingen, has described a sign of pregnancy, to which he professes to attach great importance. Owing, as he says, to the new action going on in the uterus during gestation, the uterine artery is enlarged, as is also, and in a like degree, the vaginal artery, the action of which is increased; so that its pulsations may be ascertained to be both stronger and harder, and its calibre greater than usual. During imminent abortion and other morbid conditions, he has observed the vaginal pulse to be quicker than the radial. The writer has no experience on this point; but such a test appears to him liable to so many objections, arising out of accidental circumstances, as to render it of little or no value.

CHAPTER XI.

PREGNANCY UNDER UNUSUAL CIRCUMSTANCES OF AGE, DISEASE.—
WITHOUT CONSCIOUSNESS, IMPERFECT INTERCOURSE.—SECOND-
ARY OVUM.

BEFORE entering on the last divisions of our subject, it appears necessary to advert to certain conditions, in which a female may become pregnant, and her case be thereby rendered more obscure; as when, for instance, conception takes place—1, in early youth or advanced age; 2, during the existence of disease, especially of a kind apparently calculated to prevent conception, or to render its occurrence very improbable, or to conceal the indications of its existence; 3, without the woman being conscious of having incurred the risk; 4, under circumstances not likely to be followed by such a result, as where intercourse was only partially accomplished, &c. &c.; 5, when a woman having two ova in the uterus, one of them is expelled, and the other retained, and its vitality continued.

¹ Hannoverische Annalen, B. 1, H. 2, 1836.

1. *The Age of the Individual.*—This may be such as, judging from what we observe in the ordinary course of nature, would appear either to preclude the idea of impregnation, or at least to render its occurrence extremely improbable. The limits of the generative faculty in women are generally those of the function of menstruation, which, in these countries, are usually from about the fifteenth to the forty-fifth year of the female's life; but this is liable to a good deal of variety, for some begin to menstruate at earlier periods, as at the eleventh, twelfth, or thirteenth year, and others retain the function to a very late period.¹ In some rare instances, also, women have been known to conceive before the catamenia had begun to appear² and after their cessation.³

Conception before the age of fourteen is very rare, in these countries, but there have been some instances of the kind, where menstruation was established at unusually early periods. Not long since, I saw a young lady who began to be regular in her ninth year, and had the mammæ, and other evidences of puberty fully developed. I have already (p. 88) related the case of a little girl only just twelve years old, who was suffering intense agony from accumulated menstrual fluid retained by an imperforate hymen; which I punctured, and gave exit to about a pint of discharge. It appears from the registry of 450 cases kept by Mr. Robertson, of Manchester,⁴ that ten girls menstruated in their eleventh year, nineteen in their twelfth, and fifty-three in their thirteenth: many such instances I have myself known. Mr. R. mentions that the mother and grandmother of a girl, who menstruated at twelve, had become regular at the same age; and

¹ La Motte says he knew a woman who had thirty-two children before she was forty-five, when her husband died, and she continued to menstruate regularly up to the age of sixty-one, the time of her death. *Traité des Accouchemens*, ch. xii. p. 71. Of seventy-seven cases noted by Mr. Robertson and Mr. Harrison at Manchester, in seventeen, menstruation continued beyond the age of fifty, of which two went on to sixty, and one to seventy. See *Edinburgh Med. and Surg. Journal*, vol. xxxviii. p. 254. For references to several other cases, see Davis's *Obstetric Medicine*, p. 239. Gardien relates a case in which menstruation continued regular and healthy, up to the age of seventy-five, tom. i. p. 366.

² See p. 75, and also La Motte's xxiii. Obs., on which he remarks: "Qu'une femme peut porter du fruit, avant des fleurs." See also Mauriceau, Obs. 393.

³ See p. 77, Velpeau, *Traité, &c.*, tom. i. p. 182. La Motte, Obs. ix.

⁴ *Edinburgh Med. and Surg. Journal*, vol. xxxviii. p. 231.

that five sisters in one family menstruated at the age of eleven;¹ and he afterwards relates the earliest instance of pregnancy, satisfactorily authenticated, as having taken place in Great Britain.²

The case occurred in the practice of Mr. R. Thorpe, who was called to see the girl, when attacked with convulsions in labor; the foetus was full grown, but stillborn, and the mother did well. She had been employed in a cotton-factory, and was represented to have become pregnant in her eleventh year. Mr. Thorpe and the late Dr. Hardie were at the trouble of examining the registers of her birth and christening, and fully satisfied themselves that she had really conceived during the eleventh year of her age, and that at the time of her delivery, she was only a few months advanced in her twelfth year: her figure was that of a well-grown young woman with fully developed mammae, and it was ascertained that she had menstruated before she became pregnant.³

A case almost equally remarkable, and much more shocking, occurred more recently at Coventry, where, at the summer assizes of 1848, a young girl named Sprayson preferred a charge of rape against her uncle, James Chattaway, who was convicted, and sentenced to two years' imprisonment, with hard labor. It was proved that the crime was first committed in the previous November, and four times repeated, at intervals of a week, when the girl was eleven years and nine or ten months old. She was delivered of a full-grown healthy child on the 16th of September, 1848. Her size, figure, and appearance were more womanly than could have been expected at her age; her labor was short, and in every respect favorable.

It was ascertained from the parish register, that she was born on the 13th of February, 1836; so that when her child was born, she was twelve years and seven months old. Her mother stated

¹ Essays and Notes, &c., on Midwifery, p. 29.

² In the case related by Sir A. Cooper, *Med.-Chir. Trans.*, vol. iv. p. 490, menstruation was established at four years and a half; for reference to several other cases, see Davis's *Obstetric Medicine*, p. 236, and *Peck's Medical Jurisprudence*, 5th ed., p. 368.

³ *Op. jam cit.*, p. 30. There is a case of parturition at nine years of age, said to have occurred in England, in the *German Ephemerides*, dec. 3, an. 2, p. 262.

that she had begun to menstruate when ten years and six weeks old.¹

Dr. Paris states that, "during the year 1816, some girls were admitted into the Maternité at Paris, as young as thirteen years; and during the revolution, one or two instances occurred of females at eleven, and even below that age, being received in a pregnant state, into that hospital."²

An English lady told me lately, that she was married on her thirteenth birthday, and had seven children before she was twenty-two years of age.

The following case, said to have occurred in America, and witnessed by Dr. Rowlett, of Waisborough, Kentucky, who reports it, is a remarkable instance of sexual precocity and early pregnancy, if the details are correct. Sally Deweese, born the 7th April, 1824, in the county of Butler, Kentucky, began to menstruate at a year old, and the pelvis and breasts became developed in an extraordinary degree: she continued to menstruate regularly up to 1833, when she became pregnant, and on the 20th April, 1834, she was delivered of a female child, weighing seven pounds and three quarters. At the time of publishing the case, the child weighed eight pounds and three quarters, and the mother 100 lbs., and was four feet seven inches in height.³

Bruce mentions that in Abyssinia he has frequently seen mothers of eleven years of age: and Dunlop witnessed the same in Bengal.⁴ Dr. Goodeve, Professor of Midwifery at Calcutta, in reply to a query on the subject, said: "The earliest age at which I have *known* a Hindu woman bear a child is ten years, but I have *heard* of one at nine."⁵

La Motte delivered a girl who had not completed her thirteenth year, and who had never menstruated;⁶ and Sir E. Home knew

¹ The case is fully detailed by Mr. Smith, of Coventry, in the *British Record of Obstetric Medicine*, &c., Nov., 1848, p. 359.

² *Medical Jurisprudence*, vol. i. p. 257.

³ *Transylvania Medical Journal*, vol. vii. p. 447, and the *American Journal* for November, 1834, p. 266.

⁴ *Beck's Medical Jurisprudence*, 5th ed., p. 135, note.

⁵ *Mr. Robertson's Essays and Notes*, &c., p. 118.

⁶ *Traité des Accouchemens*, Obs. xxiii. p. 52; see also *Smith's Forensic Medicine*, p. 493, note; and *Ballard*, note on Metzger, p. 485.

two instances, in one of which a girl of thirteen, and in the other a girl of twelve gave birth to children.¹ The earliest instance of pregnancy, known to the writer, was that of a young lady who brought forth twins, before she had completed her fifteenth year.

Menstruation usually ceases between forty and fifty years of age, but is occasionally prolonged beyond that period of life; I have known it continue up to fifty-five or fifty-six, and cases still later are recorded (see note, p. 256): but pregnancy very seldom occurs after fifty, especially in women who have not previously borne children; but instances have, from time to time, occurred at unusually late periods, in women who had formerly conceived. In a statement sent to Parliament by Bartholomew Mosse, when endeavoring to procure a grant for the Dublin Lying-in Hospital, he mentions that eighty-four of the women delivered under his care, were between the ages of forty-one and fifty-four; four of these were in their fifty-first year, and one in her fifty-fourth.²

Of ten thousand cases registered at the Manchester Lying-in Hospital, 436 of the women were upwards of forty years of age:—

385	.	.	.	from	.	.	.	40 to 45.
12	.	.	.	in their	.	.	.	46th year.
13	.	.	.	"	.	.	.	47th "
8	.	.	.	"	.	.	.	48th "
6	.	.	.	in their	.	.	.	49th "
9	.	.	.	"	.	.	.	50th "
1	.	.	.	"	.	.	.	52d "
1	.	.	.	"	.	.	.	53d "
1	.	.	.	"	.	.	.	54th "

Mr. Robertson observes, that as far as he could ascertain, and particularly in the three cases which were above fifty years, the catamenia continued up to the period of conception. The following case appeared in the *Edinburgh Annual Register*:³ "In May, 1816, Mrs. Ashley, wife of John Ashley, grazier, of Firsby near

¹ Philos. Trans. for 1819, p. 61.

² Case of Bartholomew Mosse, presented to the House of Commons, 1755.

³ Vol. ix. part 2, p. 508.

Spilsby, at the age of fifty-four, was delivered of two female children, which, with the mother, were likely to do well."

The succession to an estate was disputed in France, because the mother was fifty-eight years old when the child was born: the decision was in favor of the fact.¹ Colomb adduces a similar case, and Knebel² two, one of fifty-two years, and the other of fifty-four. La Motte gives a very circumstantial account of two cases of much interest in reference to this part of our subject, in both of which he attended the patients. The first was that of a woman, who had lived a life of celibacy up to the age of forty-eight, and then married, in the hope that her age precluded the possibility of having children, her menstruation also having become irregular: yet she soon conceived; but so convinced were her medical attendants that pregnancy was out of the question, that they treated her for dropsy and injured her; she had, however, a favorable labor. The other case mentioned by the same author is still more remarkable: the woman declined marriage until she was fifty-one, from the fear of having a family; but no sooner was she a wife than she became pregnant, and had so quick a delivery, that she was well before La Motte arrived, her labor not having lasted two hours.³ I was informed by an eminent accoucheur of this city (the late Dr. Labatt), that he attended a lady who was married when forty years of age, and who, after remaining barren for ten years, conceived for the first time when she was past fifty, went to her full time, and, after a difficult labor, bore a living child.

Capuron⁴ quotes several cases of child-bearing in advanced age, among which are the following: Pliny records the case of Cornelia, of the family of the Scipios, who, at the age of sixty, bore a son who was named Volusius Saturninus. Marsa, a physician of Venice, mentions that he treated a woman for dropsy who was really pregnant; but he was deceived by her age, which was sixty.

Valescus de Tarenta mentions a woman who continued to menstruate beyond sixty, at which age she bore her last child; Capuron adds, that it was generally believed in Paris that a woman, in

¹ Mém. de l'Académie de Chirurgie, tom. vii. p. 27.

² V. pol. ger. ek., i. p. 161.

³ Obs. xvi. and xvii., pp. 189, 190.

⁴ Médecine Légale, &c., pp. 92, 93, and 98.

the Rue de la Harpe, bore a daughter at the age of sixty-three, and nursed it.

The writer felt bound to notice these cases of child-bearing at sixty and upwards, because they have been recorded on respectable authority, but, at the same time, he must declare, that from his own experience, he altogether discredits their accuracy. A decision in the English Court of Chancery has shown, that the determination of this question may be a matter of great importance; in the case alluded to, an immense property was in dispute, and the sole question at issue was, whether a woman might have a child at sixty years of age. The Attorney-General argued that there was no such case satisfactorily recorded, and said, that if credible evidence could be produced in support of the fact, he would give up the claim of his client. No such evidence was produced, and he succeeded.¹ No case has occurred, either within the writer's own observation, or of the particulars of which, as reported by others, he thought he had reason to be satisfied, at an age later than the fifty-fourth year; still he by no means pretends to deny the possibility of such occurrences; on the contrary, he thinks that the facts here noticed should have the effect of making us extremely cautious, in pronouncing against pregnancy, merely because the individual may have exceeded the period of life at which the generative faculty ordinarily ceases to manifest itself; or because the woman may have lived for many years a married life without conceiving, and then shown symptoms of pregnancy. Two very remarkable instances of this came under my own observation. In one the lady married when about twenty-four years of age, and remained without any prospect of offspring for more than nineteen years, when menstruation becoming suppressed, and the size of the abdomen much increased, with swelled feet, and other symptoms which were supposed to be the commencement of dropsy, I was requested to see her, and found that she was in the fifth month of pregnancy; she was delivered in proper time of a healthy boy, after an easy labor of about four hours. In the way of rational signs, this was one of the most obscure cases of pregnancy I ever met with, as there was not one of the ordinary sympathies distinctly established; no

¹ Lond. Med. and Surg. Journ., vol. iii. p. 686.

nausea, scarcely any change in the breasts, and except the suppression of the menses, there was nothing to suggest the idea of pregnancy, until the enlargement of the abdomen took place, which was attributed to dropsy, and the suppression was supposed to be owing to the lady's age; but I was, fortunately, able at my first visit, to feel the enlarged uterus reaching half-way up to the umbilicus, and felt the foetus by vaginal repercussion; quickening did not occur until near the close of the sixth month, viz., on the 15th of February, the last menstruation having taken place on the 10th of August, and delivery on the 21st of May.

In this case conception seemed to be the last effort of the generative function; as the lady never afterwards menstruated nor conceived, though remaining in perfect health; neither did there form a single drop of milk in her breasts. Was this absence of mammary activity owing to the natural uterine, or rather ovarian stimulus having ceased to act, and so failing to excite the requisite mammary sympathy? I am disposed to answer in the affirmative.

In the same year I was requested to visit a Mrs. B., residing in James's Street, who was married at the age of twenty, and was now pregnant for the first time, after twenty-four years of married life. She was afterwards delivered, under the care of a midwife, after a labor of eight or ten hours, being then in her forty-fifth year.

Dr. Gooch relates a case of this kind which occurred in "a woman of forty-two years of age, and who had been married twenty-two years without ever being pregnant," when she at length conceived, and brought forth a child at the full time. This woman's medical attendant had been using various means for reducing the abdominal tumor, the idea of pregnancy being excluded, although she was within less than two months of her full time.¹

From what I have seen of cases like these, I think this is to be observed, that where a woman remains long childless, when pregnancy does at length occur, the symptoms, especially the rational ones, remain very long obscure.

¹ Diseases of Females, p. 220; see also Mauriceau, *Dernières Observations*, Obs. lxi.

Another condition, almost equally liable to mislead, is that in which a very long interval takes place between the periods of conception; of which the following case is a well-marked instance. In November, 1834, a lady came to Dublin, from a distant part of Ireland, to consult me on account of the state of her health, which had caused much doubt and alarm to her family. She had been married about eighteen years and had one child, a son, then seventeen years old. After his birth, she did not again conceive, although she continued in perfect health, and menstruated regularly up to the 2d of June previous to my seeing her, when the discharge appeared for the last time. After its suppression, she became affected with various equivocal symptoms which excited alarm, as pregnancy was supposed to be entirely out of the question; on examination, I told her she was between four and five months in the family way, an announcement which she received almost with derision; but I advised her to provide a wet-nurse for the middle of March, on the 19th of which month she gave birth to a daughter. Van Swieten¹ saw a lady who, at five-and-twenty years of age, had borne a son, and after having continued barren for the entire space of twenty years, was delivered of a second son, in the forty-sixth year of her age, although many thought that she was only laboring under a delusion. In Dr. Merriman's case, already referred to (p. 114), the interval between the first and second pregnancy was twenty years.

Cases in which conception has occurred after menstruation had apparently ceased altogether, have been already spoken of, and, as they are likely to be very embarrassing, are deserving of especial attention. (See p. 77.)

Neither can we, with safety, allow our judgment to be much influenced by the debility or advanced age of the husband, or reputed father; first, because we cannot always know to whom the right of paternity certainly belongs, and we must form our opinion by the state of the woman, not of the man; and secondly, because men of extreme delicacy of health, or much advanced in life, may procreate; in Schmitt's 4th case, 2d div., the husband, who was a worn-out rake, acknowledged that he had never been

¹ Commentaries, vol. xiii. sect. 1293, p. 377.

able to approach his wife in such a way as to render conception probable; but she was found pregnant; and as to the age to which a man may retain the generative faculty, I believe we may receive as true the assertion of Lord Erskine, in his speech on the Banbury peerage case, that "there is no statute of limitations on the powers and faculties of man," on which occasion he quoted the case of Sir Stephen Fox, who married at seventy-seven, and had four children, the last of which was born when the father was eighty-one. I am assured that there was residing on the Drumcondra road, near this city, a man whose eldest son was above sixty years of age, and his youngest, by a third wife, only nine months old; and it is said that a late celebrated accoucheur, at the age of eighty, was the father of four children, at one birth.¹

Harvey, in his account of the anatomical examination of the body of Thomas Parr, who lived to the age of 152 years and nine months, says:² "The testes too were sound and large, so that it seemed not improbable that the common report was true, viz., that he did public penance under a conviction for incontinence (getting Catharine Milton with child), after he had passed his hundredth year; and his wife, whom he had married as a widow, in his hundred and twentieth year, did not deny that he had intercourse with her, after the manner of other husbands with their wives; nor until about twelve years back, had he ceased to embrace her frequently."

Mr. Hall says that the grandfather of Sir William Macnaghten, who was murdered at Cabool by Akbar Khan, did not marry till he was eighty-three years old; his lady bore him two sons, one of whom he lived to see of age.³

In Schmitt's 9th case, 2d div., the husband was seventy when he married, and very doubtful of the possibility of his being a father; which circumstance, in conjunction with the small size of the uterus, its extraordinary hardness, the absence of foetal movement, and the unaltered state of the breasts, rendered pregnancy very doubtful, not only in the seventh month, but even up to the time of labor.

I was, some time since, consulted about a lady, whose state

¹ Gooch's Compendium of Midwifery, by Skinner, p. 258.

² Works, Sydenham Society Ed., p. 589.

³ Hall's Ireland, vol. iii. p. 154, note.

was a subject of much doubt and anxiety, as pregnancy was considered to be out of the question, the husband having been, for the previous six months, disabled and bedridden; miscarriage at the third month solved all doubt, very much to the lady's astonishment.

2. *Pregnancy complicated with Disease.*—Pregnancy not unfrequently takes place in diseased states of the system, which would, *à priori*, render its occurrence very improbable, and which, when it does occur under such circumstances, gives rise to unusual difficulty in recognizing its existence. From this circumstance have, from time to time, arisen some very lamentable mistakes in practice. Thus women who have been long laboring under a general infirmity of health, and with very irregular menstruation, or even a total suppression of that discharge, may conceive (see pp. 76, 80); and under such circumstances, the phenomena of pregnancy are likely to be much obscured, or even their existence at all rendered very doubtful. How often do we see women conceive when in an advanced state of pulmonary consumption, and their rapid progress to the grave only retarded until they are delivered. (See p. 52.)

Diseases which increase the size of the abdomen, as they, on the one hand, often induce the supposition of pregnancy when it does not exist, so, on the other hand, they sometimes render its detection a matter of great difficulty. Several instances have occurred in which women laboring under dropsy, even when the complaint was the result of serious organic disease, and had existed for a long time, have proved with child; and, from the combination of circumstances thus produced, great doubt and difficulty are likely to arise, especially when the woman is not herself aware of her condition, as happened to the wife of the king's counsel, mentioned by Mauriceau, who was treated for dropsy during seven months of her pregnancy, and then brought forth a child. In a case of dropsy already noticed (p. 123), which occurred to the writer, pregnancy remained a matter of the utmost doubt until the seventh month; the woman died two days after delivery, and the liver was found tuberculated, hard as cartilage, and diminished to about one-third of its natural size. In some instances, very grievous errors have been committed. Mauriceau relates two cases of this kind, in one of which the woman had

been nine years affected with dropsy in an extreme degree, but had, during that time, given birth to four children.¹ M. Chamseru had a patient who was tapped one hundred and sixty-nine times, and, during the course of the disease, bore and suckled two children, though during each pregnancy it was found necessary to tap her three times.² Foderé mentions two women who, being pregnant, were tapped, under the idea that they had dropsy;³ the uterus fortunately was not wounded; but in another case of distended bladder accompanying pregnancy, and mistaken for dropsy, the practitioner tapped the patient: "death was the consequence, and, on examination, it appeared that the trocar had passed through both sides of the bladder, through the uterus, and even into the head of the child."⁴

Avenzoar has left a confession that he was deceived about his own wife, whom he treated as dropsical, though she had passed her fourth month of pregnancy.

Such occurrences forcibly impress on us the necessity of strictly adopting as a rule of practice that, whenever a woman is so circumstanced that she may possibly be pregnant, she should not, on any account, be tapped for dropsy, or subjected to very active treatment, until a full and careful examination has been made by competent hands, to ascertain whether she is pregnant or not, or has the uterus distended; and if her state be at all doubtful, and other circumstances permit, the operation should be deferred until a further lapse of time shall have satisfied us as to the exact nature of the case; nor should the previous performance of the operation, even though repeatedly had recourse to, induce us to relax in such a precaution, as will appear from the circumstances of the following case, which, indeed, affords an interesting illustration of many of the points just now under consideration. A lady of about thirty-five years of age, who had six or seven chil-

¹ *Maladies des Femmes Grosses*, tom. ii. obs. 70 and 249.

² Quoted by Foderé from the *Bullet. des Sciences Méd. d'Evreux*, 1810, No. 18, p. 135. See also Mr. Langstaff's case, *Med.-Chir. Trans.*, vol. xii. p. 372, and another by Scarpa, in the *Quarterly Journ. of For. Med.*, vol. i. p. 249, and Ingleby's *Facts and Cases*, &c., pp. 264, *et seq.*

³ *Médecine Légale*, tom. i. pp. 463, 464.

⁴ Lowder's MS, Lectures, quoted by Gooch, on *Diseases of Females*, p. 240, and note. See Gooch, *loc. cit.* Beck's *Medical Jurisprudence*, 3d ed., p. 81. Denman's *Introduction*, p. 242.

dren, became affected with abdominal tumors which were supposed to be ovarian; their formation was soon followed by dropsy, for which it was found necessary to tap her several times; but on one occasion, a few days after the operation, she unexpectedly miscarried; no suspicion whatever was entertained of her being pregnant, and, had her gestation been more advanced, very deplorable circumstances might have ensued.

Such a rule as that above laid down, is not, of course, intended to interfere with those cases in which tapping is indispensably required during pregnancy, on account of the distress and danger induced by great accumulations of water in the abdomen.¹

The combination of dropsy with pregnancy, the difficulties thence arising and their causes, together with the mode of forming our diagnosis, have been already adverted to (pp. 123, 141), and in addition, it appears, now, only necessary to suggest that the difficulty in forming an opinion will be greater in those cases in which the dropsy has existed previous to the occurrence of conception, than when it supervenes on pregnancy, as it most frequently does: because, in the former case, the system is so disturbed before conception, that the natural sympathies and changes, which should follow that occurrence, are prevented from taking place, or they are so imperfectly manifested in consequence of, and disguised by, the pre-existing disease, that they cannot be distinguished.

Notice has been already taken (p. 141), of the distinctive signs in those cases, in which the enlargement of the abdomen, from dropsy, may be ascribed to the existence of pregnancy.

Connected with this part of our subject, an observation of Dr. Lowder's suggests an important caution: "When a retention of urine takes place in the latter months of pregnancy, as the water accumulates, the bladder cannot enlarge equally in all directions, because of the resistance which it meets with posteriorly from the gravid uterus; it therefore assumes a flattened form, and spreads upwards and laterally to great extent, over the anterior part of the uterus, at the same time giving, under percussion, an evident sense of fluctuation to the hand, insomuch that the

¹ As in the cases recorded by Scarpa and Mr. Langstaff, referred to above (see note 'p. 266), the details of which are highly instructive.

case has been mistaken for a dropsy." He then relates the unfortunate instance of this kind which has been just quoted, p. 266.

3. *Uterine Hydatids and Moles*.—These formations have been already fully considered, Chap. IX., p. 217, with reference to their nature, and origin in pregnancy; and, at present, I propose only to offer a few observations connected with the diagnosis, in those cases of pregnancy in which hydatids, or a mole, are formed; in consequence of which, the real nature, or exact state of the case, is not unfrequently involved in much obscurity and doubt; and I fear that, *in limine*, we must acknowledge, that experience has not as yet established any criteria, sufficiently constant in their occurrence, or distinct in their character, to entitle them to be considered as the essential indications by which such a combination may be decisively ascertained. All that is generally known to us, with certainty, in such cases, is, that the patient has had the usual signs of pregnancy, with irregular uterine discharges, and a distended uterus; but what its contents are, is not disclosed to us, until some of the hydatids, or the mole, are discharged.

However, several diagnostic signs have been proposed, such as the absence of fluctuation, or other evidence of a fluid being contained in the uterus, after it has acquired a certain size, and the want of a solid body capable of being freely moved within its cavity; together with the non-occurrence of quickening, at a period more advanced than that at which it usually happens (although, as I shall show presently, foetal movements are sometimes imitated in a very remarkable degree): but from what has been already said on these points, it is plain that the evidence which they furnish is quite too vague to warrant a satisfactory conclusion; witness the case alluded to (pp. 125, 264), from Schmitt, 2d div., case 9, in which all these peculiarities were observed, in consequence merely of a great deficiency in the quantity of liquor amnii, there being, as the event proved, no morbid condition connected with the pregnancy. In many instances of hydatids, the uterus has been observed to acquire quickly, a size quite disproportionate to the period of pregnancy, and to be, at the same time, much softer than usual; but both these circumstances are subject to great variety. In one case (p. 222), the

uterus was as large at four months, as it generally is at six, but was not unusually soft. Of the case related by Drs. Hardy and M'Clintock, which see (p. 220), it is expressly stated, that at four months, "the uterine tumor was on a level with the umbilicus, and felt, to the hand, less elastic than the gravid uterus generally does: she had never felt anything like foetal movements, nor could any audible sign of pregnancy be discovered."¹

In another case (p. 161) I found the uterus at five months of the ordinary size, but as hard as a scirrhus tumor, and very sensitive; while Dr. Gooch speaks of having felt the uterus "less firm than in pregnancy and more like a thick bladder full of fluid;"² and in a case related by Madame Boivin, the uterus was compact, hard, and painful, and at eight months had acquired only the volume which it presents at five months of ordinary pregnancy.³

Dr. C. M. Clarke asserts that there is "one other symptom which serves to distinguish this disease from all others, and from pregnancy, and this symptom is the discharge of an almost colorless watery fluid."⁴ It does not consist with the writer's experience to assent to the accuracy of this as a diagnostic sign, because he believes this occurrence to be no more than occasional; in several cases of hydatids, no such symptom was observed, and in other instances, there have been repeated watery discharges⁵ during pregnancy, with or without the co-existence of any morbid condition; at this moment he is consulted about a lady four or five months pregnant, with a discharge of this kind proceeding from a cluster of spongy growths around the os uteri; and in a case on which he was consulted some time since, where there was no disease, these watery discharges continued from the third month up to the time of delivery, when the lady gave birth to a healthy child. It is said that the existence of this affection is sometimes disclosed to us, by the occasional escape of some of

¹ Pract. Obs., p. 233.

² Diseases of Women, p. 244.

³ *Maladies de l'Uterus, &c.*, tom. i. p. 292.

⁴ *Observations on Diseases of Females*, part ii. p. 118.

⁵ "Discharges of watery fluid from the vagina are not unfrequent during pregnancy, and generally depend upon secretion from the glands about the cervix uteri."—*Burns's Midwifery*, 7th ed., p. 232. See a well-marked case in *Ingleby's Facts and Cases, &c.*, p. 267.

the hydatids; but I have never known this to happen until the uterine action had been established for their final expulsion.¹

From what I have seen, then, of these affections, or read in authors, I believe we have no satisfactory grounds on which to form an opinion in the way of diagnosis beyond this, that if a woman, after experiencing the ordinary symptoms of pregnancy up to the third or fourth month, is observed to be growing large with unusual rapidity, so that her size corresponds to a period much more advanced than her pregnancy really is, or is supposed to be, and she then becomes affected with irregular discharges from the vagina, sometimes of blood, and at other times of water, and, although perhaps the sixth or seventh month has arrived, no distinct and palpable motion of a fœtus has been perceived by her, nor can it be felt by any mode of manual examination or repercussion, but the uterus is ascertained to be distended, and feels as if it were filled with something of a gelatinous consistence, and there be experienced within it a sensation of gliding, or crawling, the case is *likely* to prove eventually one of hydatids.

But if (in conjunction with the same combination of collateral symptoms) the uterus be found of unusually firm consistence, irregular in form, and painfully sensitive, the case will *probably* terminate in the expulsion of a solid, or fleshy mole; but, that these can only be received as general rules, liable to very numerous exceptions, must appear obvious from the facts and observations contained in the foregoing pages.

I shall now give the particulars of two or three cases of this affection, attended with circumstances of more than ordinary interest. November 7, 1839, I saw, in consultation with the late Mr. A. Colles and Dr. Stokes, a lady, Mrs. M'G., aged forty-five, who stated that she had been in good health up to the month of June, when she became affected with hæmoptysis; she had menstruated up to the month of March, and early in August had first perceived a lump in the right iliac fossa, and from that time she had been almost constantly affected with copious serous and sanguinolent discharges; the abdominal tumor increased gradually in size, and she had constant cough, and occasional returns of the hæmoptysis. When I first saw her, the abdomen was as large as

¹ See Nauche, *Maladies propres aux Femmes*, partie i. 188.

that of a woman in the seventh month of pregnancy; the tumor had ascended rather above the raised umbilicus, and had the form of a gravid uterus, was not painful, but frequently very tender under pressure; its consistence was uniform, and had a firm, doughy feel; by the stethoscope I heard quite distinctly the uterine souffle at the right side of the tumor; it occupied only a small space, and was short, and rather imperfect in its character; no sound of a foetal heart could be discovered. The os uteri was open, so as readily to admit my finger; its margins were thin and studded with enlarged vesicles, and within it I could distinctly feel a soft fleshy mass evidently pressing down into it, and the tapering part of the cervix was obliterated or distended. There were imperfect areolæ around the nipples, and she said that her breasts had latterly increased very much in size, and were occasionally sensitive and tender; she also stated that she had, on several occasions, felt a very peculiar sensation of motion in the tumor, which she described as consisting of a tap, or pat two or three times repeated, and of a gliding, or crawling sensation, which had always been followed by some hemorrhage; I could not detect anything of this kind by examination; but I have very little doubt that it was produced by partial and successive contractions of some of the uterine fibres. In reply to a question of mine on the subject, she told me that in her last five pregnancies, hæmoptysis had occurred, and, having lasted for two or three months, then ceased.

Taking all these circumstances into account, I gave it as my opinion, that the tumor was a distended uterus, and its contents, most probably, a morbid product of conception, such as a mole, or perhaps hydatids; and that the hæmoptysis was merely sympathetic, as has been often observed in cases of pregnancy (see pp. 54, 236). On the morning of the 15th I was summoned to her assistance, when I found expulsive uterine action fully established, with considerable hemorrhage, and what I at first took for a placenta, presenting at the os uteri: a wash-hand basinful of hydatids was afterwards expelled and extracted by the hand from the uterus, with a large quantity of decidua, but there was no trace of a foetus. In this case, the hydatid mass was retained in utero for seven months and a half.

In the other case alluded to, a lady consulted me on account

of symptoms of abortion occurring about the middle of the fourth month; she thought she must be further gone, as she had distinctly felt the motion of the child; which, however, was not of the usual kind: it was not, she said, a pulse or stroke, such as she had felt in former pregnancies, but a kind of sliding motion, of which she was frequently conscious, and on several occasions she directed my attention to it at my visit.

In this case, when the ovum was thrown off, it did not appear to have acquired a growth of more than two months and a half; it was completely enveloped in the decidua reflexa, and when this was turned back, the hydatids were seen growing from the villi of the chorion. At first, one or two sprung from a fine thread-like stalk, then from these, one or two more, and so on, until a large bunch of hydatids was formed, hanging from the chorion by the original delicate single tendril.

The sensation of gliding motion felt in these cases, would appear to favor the idea entertained by some, that hydatids possess the power of motion, but it is much more probable that it results simply from contractions of the uterine fibres. It is to be recollected, that the same sort of movement has been felt in cases of abdominal tumor where there were no hydatids, as in a case of Dr. Ingleby's already referred to, p. 126; and in another case under my own observation, of a fleshy mole with a few hydatids embedded in its substance, a very distinct sensation of foetal motion was perceived by the woman.

Bridget Smith, aged forty, and of a full stout habit, applied to me for advice on the 22d December, 1841, stating that being within a few days of her confinement of her fourth child, she was much alarmed in consequence of smart hemorrhages which had occurred frequently during the previous two or three weeks. She had menstruated regularly for the last time on the 11th of March, after which she began to experience the usual symptoms of pregnancy, and quickened, as she thought, on the 30th June; on which occasion there appeared a few drops of blood from the vagina; from this period sanguineous discharges in greater or less quantity occurred every fourth or fifth week, until December, when they became more profuse, and returned at shorter intervals. The sensation of *foetal motion* was frequently repeated; but it was, she said, very feeble. There was, however, sometimes felt, the

distinct tap, so characteristic of it in the healthy state, but the gliding or crawling motion was not at any time perceived; the abdomen was but slightly enlarged, and the umbilicus was depressed. There was a tumor perceptible in the right iliac hollow, of the size and form of the gravid uterus at four months, but it was as firm as some specimens of the fibrous tumor, and was painfully sensitive to pressure. On examination, per vaginam, the os uteri was found open to the diameter of a shilling, and readily permitted the introduction of the first phalanx of my finger; its margins were natural in texture, rather soft, and studded with well-developed healthy muciparous glandulæ; in short, the part had altogether the characters belonging to pregnancy, while the cervix was as much shortened and taken up to form part of the uterine tumor, as it is at seven months: the breasts were flabby, the areola presented a tolerably well-marked brown color, but in every other respect its characters were very imperfect; neither its follicles nor its disk were raised, there were no veins to be seen about it, and it looked faded.

From these facts, I concluded that conception had taken place, as she supposed, in March, and pregnancy had probably gone on naturally for some time; that then, the ovum had become diseased, and was converted into some species of mole, most probably of the fleshy kind, considering the great solidity of the uterine tumor, its painful sensibility, and the entire absence of anything like fluctuation, or even resiliency. I told her, that she was not going to be delivered of a child, as she supposed, but that she would probably have labor pains, and get rid of something which was enlarging her womb. On the 27th December, she expelled, with great hemorrhage, a very solid fleshy mole, with hydatids embedded in its structure. Singularly enough, this woman had, two years afterwards, a repetition of the same accident, attended with a prolonged retention of the ovum, the particulars of which will be more appropriately related when we come to speak of protracted gestation.

From what I have seen of this combination, I think we might adopt the following propositions as tolerably correct.

In hydatid gestation, the uterine tumor feels, in every part, of the same consistence; and it is generally of a firm doughy cha-

racter, or sometimes even as hard as some varieties of the fibrous tumor.

The cervix is abbreviated and dilated much sooner than in healthy pregnancy.

The os uteri is, at the same time, often found so open as readily to admit the first phalanx of the finger; and instead of smooth membranes, we feel a semi-solid substance, like placenta.

The firmness of the uterine walls is, in general, constant, but in some cases it is only transitory, and is produced by passing contractions of the uterine fibres, as, indeed, happens not unfrequently in natural healthy cases.

In some cases, a peculiar kind of creeping, or sliding motion is felt, and is apt to be followed by a discharge of blood, or water. This is, I believe, produced by partial contractions of the uterine fibres displacing the hydatids from one part of the uterus, and pressing them towards another, and against each other.

An obscure sensation of fluctation may occasionally be felt in the tumor, when not very solid, as if it were filled with firm jelly, rather than with any thin fluid.

4. *Uterine Tumors*.—Tumors, especially of the hard fibrous kind, either embedded in the substance of the uterus, or attached to it, are frequently met with; and however large, or numerous they may happen to be, they do not always prevent conception, but they greatly disguise its result, and render its consequences much to be dreaded; though, when of small size, few in number, and situated in the upper part of the organ, neither gestation nor delivery is necessarily affected by their presence. The writer is in the habit of attending two ladies, one of whom has had eight children, and the other five, with easy labors and good recoveries; the former lady having two fibrous tumors, about as large as walnuts, on the anterior surface of the fundus uteri; and the other having one tumor, of the same kind and size, just over the entrance of the Fallopian tube; these tumors are not perceptible till about the fourth month of pregnancy, and have never given any trouble. I have attended another lady in three confinements, who has a fibrous tumor as large as an orange, just under the peritoneum, at the fundus uteri, and her labors and recoveries have been perfectly good; indeed, I have seen many cases of this kind where, even with tumors of considerable size, labor has pro-

ceeded most favorably; but these must be regarded as fortunate exceptions.

In a case which occurred in Bristol, in 1835, there were found no less than twelve of these tumors attached to the uterus, some of them as large as an orange; the labor ended fatally, in consequence of a rupture of the vagina under peculiar circumstances.¹ When such tumors acquire great bulk, and pregnancy occurs, they give rise to a combination which imposes extraordinary obstacles in the way of forming a correct diagnosis, and is, moreover, but too likely to entail unusual difficulty and proportionate danger at the time of labor,² as in the case of Anne W., already related in Chap. II. p. 57.

The different functions are often previously so disturbed, that any alteration in their exercise, from which, under ordinary circumstances, we should receive assistance in forming our opinion, is now rendered unavailable in the investigation; and when a period has arrived at which the condition of the uterus might be readily ascertained, we are often, to a great degree, deprived of our most valuable kind of information, namely, that which is derivable from the physical changes effected in the organ itself, and from the nature of its contents; the distended state of the abdomen and the extreme tension of its parietes rendering it oftentimes impossible to recognize externally the exact form or condition of any of the contained organs; and the obstruction of the pelvic cavity may be such as greatly to impede, or even altogether prevent, the possibility of making the ordinary examination per vaginam, as in a case to be related presently.

Under such circumstances, by a patient examination with the hand, we may be fortunate enough to detect the active motions of the fœtus; or the application of the stethoscope may reveal to us the true nature of the case. Should these means, however, not be successful, we must then form our opinion from a careful consideration of all the rational signs, or sympathies that may have been noticed, especially the mammary changes, among which the state of the areola deserves particular attention; and

¹ See Lond. Med. Gazette for August 29, 1835, p. 763.

² See Cruveilhier, *Anatomie Pathologique*, liv. xi. pl. 5. Dr. Ingleby's *Facts and Cases in Obstetric Medicine*. Troussel, as quoted by Madame Boivin, tom. i. p. 320. Voigtel, *Semeiologia Obstet.*, p. 59.

we may also be assisted by the distinctness with which the sensations of foetal motion are asserted to have been felt, by a woman well acquainted with them from experience, and without any motive for deception.

Perhaps I cannot better illustrate the extreme difficulty that may attend an investigation of this kind than by the relation of a case, the particulars of which have been already fully detailed elsewhere;¹ among which, were combined the following circumstances, rendering the occurrence of conception almost incredible, and the detection of pregnancy extremely difficult:—1st, several years of married life without conception; 2d, a pre-existing morbid tumor in the abdomen, which, even at the time of marriage, was of such a size as to render the consummation of that rite nearly impossible; 3d, the continued growth of the tumor, which, long before the occurrence of impregnation, so filled the cavity of the pelvis, as to impede strongly the introduction of a common catheter into the bladder; 4th, the impossibility of making an examination *per vaginam*.

On the 17th of May, 1834, I was requested to see a lady in consultation with Mr. Hugh Carmichael. She had been married in September, 1830, and had not had any child, nor ever been pregnant, as far as she knew. On the 5th of April, 1833, Mr. Carmichael had been called to see her, in consequence of inability to discharge the contents of the bladder, when he ascertained the existence of a tumor in the pelvis, which rose up into the right iliac fossa, and filled the pelvic cavity so completely as to obstruct the passage of the catheter into the bladder, to such a degree, that Mr. Carmichael was obliged to use a force which nothing but the exigency of the case would have induced him to venture on, but which, under the circumstances, was absolutely indispensable: he also observed, at the same time, that the cavity of the bladder was much more distant than natural from the external parts, as more than four inches of the catheter were passed before its point entered the urinary reservoir. Her general health had been delicate, the functions of the bladder and rectum occasionally disturbed, and she was often affected with irregular pains through the pelvis and along the inside of the thighs; but

¹ See Dublin Medical Journal, vol. vi. p. 418.

menstruation had continued perfectly regular up to February, 1834, on the 14th of which month the discharge had appeared for the last time. Towards the beginning of April, her symptoms had become much aggravated; she experienced great general distress and debility; her stomach became excessively irritable, and the tumor more painful than usual; she got pain in the back, and toothache; she had also suffered a great deal from irritation of the bladder, and had had suppression of urine for several days, a short time before my visit; she also complained of a most distressing sense of pressure on the lower part of the rectum. On examination, I readily ascertained the presence of an immense tumor, occupying almost the whole right half of the abdominal cavity, ascending as high as the ribs on that side, and dipping down into the cul-de-sac, behind the vagina, so low as to be within less than an inch of the external parts, and so completely filling the cavity of the pelvis, that it was with difficulty the point of my finger could be inserted between it and the symphysis pubis, but by no means could the os uteri be reached. The tumor was everywhere of a firm consistence, amounting almost to cartilaginous hardness, and was uneven and knotty on its surface. I also ascertained very distinctly, by external examination, that there was a second tumor, more to the left, but evidently in close connection with the former. This second tumor, *which was not nearly so high in the abdomen as the other, felt softer and smoother on its surface*; neither of the tumors was sensitive, and there was only one spot which was tender on pressure. Her general health she considered but little impaired; her pulse was tranquil, her appetite tolerably good, and she slept well. As she complained of a good deal of pain in one of the breasts, I thought it necessary to examine these organs; and in doing so, I observed what appeared to me just the dawning of the characters which mark the areola of pregnancy, but there was hardly any prominence of the breast itself; however, on inquiry, she informed me that, naturally, she had no mammary development at all, and that small and flat as the breasts then appeared, they were somewhat larger than they had been two months before. Connecting this appearance of the areola and the state of the breasts, with the fact of suppression of the menses, and the period of its occurrence, and with the existence of nausea and vomit-

ings, I thought it right to suggest to her husband and Mr. Carmichael, just the *possibility* that these new features in the case might arise from pregnancy; adding, that I hoped it might not be the case, as such an occurrence would be but too likely to aggravate the evils already existing. I felt bound to say thus much, from the circumstances presented to my notice, although, from the immense amount of disease and its situation, I really thought the occurrence of impregnation hardly within the limits of belief.

I did not see the lady again until July 15, when I found the abdomen considerably increased in size, and, instead of its former lateral enlargement, it had become generally prominent. The hard tumor at the right side seemed smaller, while the one to the left was much larger and softer, with an indistinct feeling of fluctuation; *the left tumor now overtopped the other an inch or two*, and the umbilicus was raised, nearly to the level of the surrounding integuments. On examination per vaginam, the tumor was felt as before, rendering the introduction of the finger impossible, except by great force, and even then, not more than half of it could be introduced; I need scarcely add, that I could not reach the os uteri. I now suspected, still more strongly, that she was pregnant, and that the tumor to the left was a gravid uterus, of which it had very much the feel. On asking whether she had, at any time lately, experienced any particular sensation in the left side, she told me, that for the last week or two, she had repeatedly been conscious of an indistinct sensation of very slight motion, "as if wind had suddenly changed from one spot to another, but that she could not imagine what it was, for she was sure it was not wind." I now examined the left tumor with the utmost care, but could not detect anything like the body or limbs of a foetus; and I may observe here, that this kind of examination was, at all times, rendered particularly unsatisfactory, by the extreme tension of the abdominal integuments, and of the walls of the uterus, caused by the immense solid bulk contained within the cavity of the abdomen. Her general health was now greatly improved, and she felt cheerful as to her situation: the only thing of which she complained much, was the occurrence of weaknesses, amounting almost to fainting, which she frequently experienced; but these are too often the accompaniments of

pregnancy to attract much attention from the practitioner. On this occasion, I examined with the stethoscope, and heard distinctly, in the upper part of the right lateral region of the soft tumor, a sound much resembling the placental murmur. I could not detect the pulsations of the foetal heart; but, as I sat by her bedside, the slight motion already described, occurred, and I felt it; in the expectation of which, I continued the manual examination for considerably more than an hour, alternating pressure of the tumor in different directions, with the application of my hand spread over the abdomen, and there allowed to remain quiet, while I engaged the patient in conversation: the sensation appeared to me such as would be produced by the movement of a very small foetal limb, but it was singularly feeble and indistinct. I thought I was now justified (indeed, called on) to suggest to her the great probability of pregnancy, of which, strange to say, she did not entertain the most remote idea.

August 29. The existence of pregnancy, now of six months' duration, was now no longer doubtful; for, although I could not, as yet, detect the pulsation of the heart of the foetus, nor feel its limbs or body by external pressure, I succeeded in feeling very plainly and repeatedly its active movements, by again keeping my hand for a long time spread over the left side of the abdomen. Vaginal examination was still equally impracticable, there being no possibility of approaching the os uteri.

September 25. On this day, for the first time, I recognized the pulsations of the foetal heart beating about 150 in the minute, and most distinctly audible in a line from the umbilicus to the upper and anterior point of the os ileum of the left side: the patient's state of health was greatly improved; she had got a little more flesh, and was able to take a good deal of walking exercise; the breasts had increased a little in size, but the characters of the areola were still very imperfectly marked, in which state they continued throughout; a defective development which, according to my experience, is to be referred to the co-existence of the organic disease.

On the 11th of November labor supervened, and the Cæsarean operation was performed by Mr. Porter, twenty-one hours after which the patient died.

Permission having been obtained to open the body, the examina-

tion was made next day by Mr. Porter, Mr. Collis, and myself, with the assistance of Mr. William Day. On turning aside the abdominal coverings, the tumor came prominently into view, rising up out of the pelvis and occupying the right half of the abdomen, as high as the ribs of that side. The uterus lay to the left, but was lifted completely out of the pelvis, so that even the os uteri was altogether above the brim, and pointed towards the abdominal ring of the left side; the bladder, also, had undergone a similar change of place, and the cavity of the pelvis was so entirely occupied by the tumor, that the point of the finger could not pass into it from above. The upper half of the tumor was quite unattached to any of the surrounding parts except the uterus, and Mr. Porter, by drawing this part of it forwards over the symphysis pubis, raised the whole mass out of the cavity of the pelvis, to the peritoneal lining of which the tumor was attached by several membranous bands, the result of inflammation; the vagina was cut across, and the parts removed. The morbid growth was now at once recognized to be a fibrous tumor, growing from the substance of the uterus, and covered with the peritoneum, which naturally forms the investing membrane of the latter organ; it had sprung from the posterior surface, and right side of the uterus; the part of it which formed the medium of attachment, measured between nine and ten inches in circumference, and occupied nearly one-half of the whole length of the organ, comprising the upper part of the cervix, and the greater part of its body. In form the tumor was kidney-shaped, with its concave edge towards the uterus; its length was between eleven and twelve inches, and its average breadth five and a half: the portion of it which was embedded in the pelvic cavity was of greater dimensions than any other part, measuring, transversely, five and a half inches; from before backwards, five; and in depth four and a half inches; and *its circumference in that situation was sixteen inches*, while above the cavity of the pelvis, its thickness did not amount to four inches, and its circumference did not exceed fourteen; from this circumstance conjoined with the fact already ascertained, that the tumor had grown from the posterior part of the cervix and body of the uterus, as well as from the history of the growth of such tumors generally, it appeared perfectly plain, that the first growth of the tumor must have been in the

cul-de-sac, between the rectum and vagina, where it formed several superficial adhesions with the surrounding pelvic peritoneum, which of course fixed, and detained it in that situation, where it continued to grow, until it completely filled all the space there afforded; when its further increase was accommodated by its rising into the abdominal cavity, carrying with it the uterus of which it was a part, and also the bladder. The parts as removed weighed nearly ten pounds, so that the tumor must have been about eight pounds in weight; its external surface was very vascular, containing vessels as large as a goose-quill passing into it from the uterus; its consistence was remarkably dense and solid to the touch, and when cut into its structure was found to be strictly that of the *corps fibreux* of the French pathologists, or fibrous tumor.

The late Dr. Ingleby, in the 6th volume of the Dublin Medical Journal (p. 341, *et seq.*), made some very apposite remarks on the connection of these fibrous tumors with pregnancy and labor; and a highly interesting case is detailed in illustration, some of the particulars of which strikingly resemble those under our present consideration; and in the 17th volume of the same journal (p. 411), a case of great interest and practical importance is related by Dr. T. E. Beatty.

In a case by Dr. Ashwell,¹ the lady, who was forty-four years of age, had been married fourteen years, and gave birth to a child six years after marriage, but during the subsequent eight years, was not again pregnant. When visited in January, menstruation had been suppressed from the July preceding, but she had had irregular gushes of blood: in September, an abdominal tumor was discovered at the right side; and in November, a second at the left side: she had occasional nausea and vomiting, and several of the early symptoms of pregnancy; but even in January, the sixth month, the child could not be felt, nor any opinion formed as to the character of the uterine contents, though the cervix had lost a considerable portion of its length, and the body of the uterus was evidently enlarged. Labor came on in the eighth month, with placental presentation, delivery was effected, and the woman died. On examination of the uterus, there were found

¹ Guy's Hospital Reports, No. ii. p. 316.

on its anterior part, fibrous tumors, of semi-cartilaginous hardness, two as large as cob-nuts, and there were two others as large as oranges, embedded in the substance of the organ. This, also, was a case of extreme difficulty to form a correct opinion of, but still not nearly so much so as that previously detailed by the writer, in which any examination per vaginam was utterly impossible.

While preparing these sheets for the press, I was requested to see a lady, whose case teaches an important practical lesson in connection with the subject before us: before marriage, which took place when she was about thirty-five years of age, she was known to have "a lump in her side," with other symptoms indicative of uterine disturbance; on which account, it was deemed prudent to have medical advice before she was permitted to accept a proposal of marriage then made to her. A practitioner of eminence in London, not an obstetrician, was accordingly consulted, by whom she was examined through the abdominal parietes, but not per vaginam. He at once told the lady's mother, that there was no objection to her marrying if she wished it, but that the state of the womb was such as to preclude altogether the probability of conception.

When I was called to see her a few months afterwards, I found her in great torture, with severe periodical pains like those of labor; I was then informed that menstruation had been absent for about eight weeks, but that she had now got what was considered a profuse return of it. Within twenty-four hours she miscarried of an early ovum after great suffering and exhaustion, and had a slow convalescence.

There was no difficulty in ascertaining, in this case, that the uterus was actually buried in a bunch of fibrous tumors which filled up both iliac fossæ, and per vaginam could be felt dipping down into the cul-de-sac between the vagina and rectum; so that the uterus was completely fixed; and under the increased vascularity and exalted vitality accompanying pregnancy, the tumors had acquired greater size, and painful sensibility; as was proved by the fact, that after the miscarriage was over, and a few weeks had elapsed, the tumors were found much smaller, softer, and free from tenderness. Had the state of this lady's case been properly investigated, she ought not to have been permitted to marry.

5. *Ovarian Tumors*.—Enlargement of the ovary is another disease which may either simulate pregnancy, or coexist with, and conceal it; and the abdominal enlargement increasing, may be mistaken for the progress of the disease, which in so many respects resembles gravidity; for although the ovary in its natural state is so much smaller than the uterus, it is, when enlarged by disease, of as great, or even greater volume than the gravid uterus at the full time: when both ovaries are affected, pregnancy is of course much less probable, yet it has occurred. In a case formerly under the writer's care, a lady with ovarian enlargement on both sides, and of considerable size, became pregnant, and her true condition was not recognized until pregnancy was very far advanced; when the application of the stethoscope detected the pulsations of the foetal heart. In another case, related by Mr. Hewlett, both ovaries were found extensively affected with malignant disease, and the tumor formed by one of them presented a serious obstacle in labor:¹ the morbid affection appears, from the details given, to have made rapid progress after the occurrence of conception; which, however, might take place, even though there coexisted an immense amount of disease in the ovaries, provided a small part of one of them retained its natural structure; for I think we may believe with Morgagni,² that a woman may conceive, if there remain as much of one ovary sound as belongs to one mature vesicle.

Dr. Merriman gives a very interesting case, in which pregnancy must have occurred in conjunction with an ovarian tumor, so large as to fill almost completely the whole cavity of the pelvis; where it formed a serious obstacle to delivery, which was only accomplished after puncturing the tumor and lessening the child's head;³ and the same combination is represented in his first plate.

The degree to which the presence of an ovarian tumor may, even in very competent hands, prevent the detection of pregnancy, is forcibly illustrated by the following case, which occurred to Mr. Burd, senior surgeon to the Salop Infirmary.⁴

Anne Jones, aged twenty-five, was admitted into the above

¹ Medico-Chir. Trans., vol. xvii. p. 226.

² Epist. xlvii., art. 28.

³ Synopsis, &c., p. 240.

⁴ Med.-Chir. Trans., vol. xxx. p. 95.

institution, 5th Sept., 1846, with enlargement of the abdomen, in which there was very distinct fluctuation; she said that she had menstruated regularly during the previous five months, and on the last occasion profusely; the breasts were flaccid, and the areolæ afforded no indication; she had borne three children, and now felt confident that she was not pregnant; having none of the symptoms usual with her on former occasions; the os uteri could not be reached, nothing could be discovered by the stethoscope; so that neither the woman's history, nor the local evidences, afforded any grounds whatever for suspecting that she was pregnant. A tumor of considerable size had been previously detected occupying the right side of the abdomen.

"The opinion of the medical staff having been requested, it was unanimously agreed that the case was of a nature which justified an attempt to remove the tumor by operation." The patient having assented, on the 15th Sept. the abdomen was opened by an incision extending from the pubes to within about an inch and a half of the ensiform cartilage, and "on drawing the tumor forward, so as to examine its pedicle, the uterus was brought into view in a gravid state, and was supposed to have reached the third or fourth month of pregnancy." On the 17th, she miscarried after an easy labor, which she bore better than could have been expected; the child was born alive. After a hard struggle she recovered, and on the 6th Nov. the wound was quite healed, and she was able to walk about; she left the hospital on the 15th, and was soon afterwards able to engage, without inconvenience, in her usual domestic duties.

This case forcibly inculcates the difficulty of detecting pregnancy when complicated with disease, and the necessity of instituting most careful inquiries into the particulars of supposed menstruation; for which, as was afterwards ascertained in this case, irregularly recurring slight hemorrhages had been mistaken.

The interest of this case is greatly heightened by the fact that within nineteen months after undergoing the operation, viz., on the 4th of April, 1848, she gave birth to a fine healthy boy;¹

¹ Med.-Chir. Trans., vol. xxxii. p. 64.

thus, affording also another proof, if any were wanted, that the absence of one ovary is no impediment to conception.

I may just observe here, that I have met with cases of this kind, in which the tumors have disappeared after labor, and apparently in consequence thereof. In 1847 I was consulted by a lady who had previously suffered from swelled leg in more than one of her labors: she was now affected with excoriation of the cervix uteri, and had a tumor the size of a large orange in the right iliac fossa; the uterine affection soon got well, and the lady returned to the country, and shortly afterwards proved pregnant, and after delivery had a severe attack of phlegmasia dolens, which was unusually protracted; I did not see her again till 1849, when, on examination, I was surprised and gratified to find not a trace of the tumor remaining. In another case of ovarian tumor as large as a melon, the lady caught cold while waiting for her carriage at the door of a ball-room, on a frosty night; the result was an acute attack of peritonitis; for which she was actively treated by depletion and mercury; when I saw her six months afterwards the tumor was completely gone.

Dr. Hamilton, in his observations on cases of this kind, says that in one of them, occurring in a lady in her twenty-eighth year, the enlargement disappeared after the birth of her fourth child, but it had begun to subside before pregnancy. In another instance, the lady had two unmarried sisters, who had long been affected with enlargement of the ovary, and who eventually died from the disease. After this lady was delivered of her sixth child, it was discovered that the left ovary was enlarged to the size of a cocoa-nut; and Dr. H. augured most unfavorably of the event. She again became pregnant, and after the birth of her seventh child, the enlarged ovary could no longer be felt. Fifteen years afterwards she had remained in perfect health.¹ As has been already noticed, p. 265, of women affected with dropsy, so also women with ovarian tumors have, as in the above case, borne several children safely, the disease remaining all the time; of this I have seen not a few instances.²

The observations just made on uterine tumors will, for the

¹ Practical Observations, &c., 2d. ed., p. 49.

² See Gooch, Female Diseases, p. 239.

most part, apply to the cases now under consideration; in which a proper examination of the uterus per vaginam will very often enable us to detect satisfactorily the true nature of the case; to this examination, however, the size and situation of the tumor, by obstructing the passage of the finger, may present a great impediment, as it did in Mr. Hewlett's case;¹ or the uterus may be raised so high by the growth of the tumor, as to be altogether out of reach; of this, the writer has met with several well-marked instances. On the other hand, the existence of such a disease has repeatedly given rise to the suspicion of pregnancy, when that condition did not exist. In the celebrated case of the Demoiselle Famin, published at Berlin and Paris by Valentin, in 1768, a charge of pregnancy and child-murder was erroneously instituted, in consequence of an extreme case of ovarian dropsy. The woman was convicted and sentenced to death, and only escaped by an appeal to Parliament.²

The general rules of diagnosis in such cases have been already noticed, p. 138.

6. *Extra-uterine Fœtus*.—It occasionally, though rarely, happens that we meet with cases in which uterine pregnancy is found co-existing with a fœtus lying in the cavity of the abdomen, the result of a former conception, the child having either escaped from the cavity of the uterus, or from some of its appendages; or having been, *ab origine*, an extra-uterine fœtus; and, strange as it may at first sight appear, women have, under such circumstances, again proved pregnant, and that not merely once or twice, but several times, and given birth to healthy full-grown children, after safe and favorable labors.

I had once an opportunity of examining a very remarkable case of this kind; a woman was received into the Cork Street Fever Hospital, in 1828, with considerable enlargement of the abdomen. Her history, as far as it could be learned, was, that eight years before she had been in labor, which, after continuing for two days, suddenly ceased, and the child, as she expressed herself, rose up into her stomach; *no delivery followed*. After remaining in bad health for about two years, she again experi

¹ See also Merriman's Synopsis, p. 241.

² Quoted in Foderé, Méd. Lég., tom. i. p. 476.

enced the symptoms of pregnancy, and gave birth to a child, which did not survive; but the former child still remained in the cavity of the belly, and during its continuance there, she bore three children, the last of whom lived. Ultimately, a fistulous opening formed near the umbilicus, which was enlarged, and the original child removed; *it was in a state of wonderful preservation*, measured twenty-two inches in length, and had attached to it about two feet of the umbilical cord.¹ A case of a somewhat similar kind has been recorded by Dr. Steigertahl, in which the woman lived in good health to the age of ninety-four, with a full-grown foetus in the abdominal cavity for the last forty-six years of her life, during which period she bore two other children.²

Primrose has recorded a very striking case of this nature, in which a woman, aged thirty, who produced one child after each of six impregnations, and twins at the close of her seventh gestation, conceived again in March, 1591, on which occasion everything seemed to announce a favorable result, till the ninth month, when tormina and lumbar pains supervened. Professional aid was procured, but the abdominal uneasiness subsided and was not accompanied by any of those changes usually attendant on parturition. Foetal movement also ceased; but the abdomen, more especially towards the right side, continued enlarged; and after some days, the patient was restored to health. The catamenia returned, and continued for two years, to flow with regularity; when, in May, 1594, the woman again manifested the usual phenomena of pregnancy, such as foetal movement and tumefaction of the abdomen. In the eighth month, the motions of the foetus became violent and irregular, with pain in the loins and lower part of the abdomen; but, as in the preceding gestation, *these efforts also terminated unsuccessfully*. After a lapse of nearly three months, a hard and large tumor appeared in the abdomen, while that in the right side was still manifest and very troublesome. In June, 1595, nature interposed to effect a separation betwixt the living and the dead, by the forma-

¹ A notice of this case was published by Dr. O'Reardon, in the *Medico-Chirurgical Review*, for October, 1828.

² Vide *Phil. Trans.*, vol. xxxi. p. 126.

tion of an abscess at the right side of the umbilicus, from which, with a profusion of pus, foetal bones were evacuated. In August of the same year, it was resolved to open the tumor on the left side, whence the bones of the second foetus were extracted; and shortly thereafter, the patient was restored to her former state of health.¹

In Smellie's collection of cases (vol. ii. p. 73), Dr. Middleton gives the particulars of a case, in which a woman retained a child for sixteen years, in the cavity of the abdomen: during which period she gave birth to four living children, with such quick labors that, in three instances, she was delivered before the doctor could get to her. She died in Guy's Hospital, worn out with constant pain. After her death, the original child was taken out of the abdomen, and "*seemed noways putrid*," although it had lain there lifeless for sixteen years; having apparently become lodged there immediately after the mother had received a great shock, by a child dying of convulsions in her lap when she was six months pregnant, after which she had labor pains, *but no delivery followed*. This case has been already alluded to, p. 31.

In another case, a tumor was discovered in the abdomen of a woman who died at the age of forty, which had first appeared some months after marriage, twenty years before; at which time labor had come on at the sixth or seventh month, *without any result*. After this, she had borne eight children. After death, the tumor, enveloped in a cyst with ossified walls, was removed, containing a child of six or seven months, "*as well preserved as if it had been artificially inclosed after the labor*."²

Still more recently, a case of this kind has been recorded by Dr. Will, of Aberdeen, in which a child thus remained for ten years in the cavity of the abdomen; during which time, the mother gave birth to two other children, both full grown and healthy.³

It is to be noticed that, in every one of these cases, labor had supervened with the original child, but terminated without delivery; it is also a curious fact that these children were all

¹ Morbis Mulierum, lib. iv. p. 316.

² Edinb. Monthly Med. Journ., Oct., 1851, p. 387.

³ Edinb. Monthly Journ. Med. Sci., Aug., 1854, p. 137.

found in a state of remarkable preservation. The difficulties in the way of diagnosis, and the methods of conducting the examination in these cases are much the same as in other cases of abdominal tumors complicating pregnancy.

7. *Polypus, Scirrhus, Prolapse*.—Some of the most formidable diseases of the uterus have been found not incompatible with conception, and even the completion of the full term of gestation. Thus, instances of the concurrence of polypus uteri and pregnancy have been several times witnessed; and in some cases, the placenta has been found attached to the polypus.¹ The writer has a preparation, in which an early ovum is thus connected. Levret,² Bach, Jörg, and Dr. Macfarlane have recorded cases in which the foetus reached its full time under such circumstances. In the year 1833, I was brought to see a poor woman, in consequence of the descent of a polypus into the vagina immediately after delivery.

February 10th, 1843, I met Dr. Bingham and Mr. Brabazon beyond Downpatrick, to see a lady who had been delivered on the 24th of the preceding month, when she gave birth to a large child, after an easy labor; immediately after which, a large firm tumor, of the size of a full-grown foetal head, was found presenting at the os uteri. After the lapse of half an hour, the placenta, of large size, was expelled without any undue hemorrhage. After this, the tumor continued to descend, day by day, until it filled the vagina, but without hemorrhage, and with very little pain or uneasiness of any kind: it was now decided to put a ligature round its upper part, which I accomplished with considerable difficulty, owing to the bulk of the tumor in the vagina, and eight inches of ligature were expended in encircling the part round which it was passed. The case ultimately did well, the lady recovered perfectly, and had another child. I shall only add, as a remarkable fact, that in this case, no symptoms had appeared previous to, or during the pregnancy in question, to lead to the suspicion of any uterine disease.³

¹ See Glasgow Medical Journal, vol. i. p. 422. Bach. Mayor de Polypis, quoted by Cooper in the Surgical Dictionary, article *Polypus*.

² Mém. de l'Acad. Chir., vol. iii. p. 543.

³ For the full details of this case, see Dub. Med. Journ. for Aug., 1846, p. 65.

Dr. Gooch relates a somewhat similar case which occurred to Mr. Borrett of Yarmouth, but in which the patient died the day after delivery; worn out, and exhausted, apparently from the incessant and violent expulsive efforts of the uterus to force away the polypus.¹

The late Dr. Beatty, of this city, met with a case in which a tumor so large as to weigh nearly four pounds coexisted with pregnancy; the lady miscarried in the third month, and a week afterwards, the tumor was expelled by regular efforts of the uterus, which became inverted, was replaced, and the lady did well, and fifteen months afterwards, bore a healthy son.² Some of the circumstances connected with this case were very peculiar.

8. *Malignant Diseases*.—Even cancer and fungoid diseases of the uterus have been proved, not only not to prevent the occurrence of pregnancy,³ but to be compatible with the completion of the full period of gestation; and a scirrhus cervix has been found an obstacle in the time of labor, even to such a degree as to cause rupture of the organ, by its efforts to overcome the resistance.⁴

Some years ago I saw, in consultation with the late surgeon Walker, a patient in a very advanced stage of cancer uteri, who had miscarried twice during the previous year, about the fourth month of gestation.

The following case presents several circumstances of unusual interest: On the 22d March, 1843, I was requested to visit a lady of about thirty-three years of age, who had been pronounced, on competent authority, to be laboring under malignant ulceration of the os uteri. This I found to be the fact; she had ulcerated cancer of the uterus, with all its horrible concomitants of pain, abominably fetid discharge, &c.; and, up to the previous December, she had had frequent hemorrhages; but since that month, there had been no red discharge at all. From the account given

¹ Diseases of Females, p. 290.

² Trans. Assoc. Coll. Phys. Ireland, vol. iv. p. 1. Lond. Med. and Phys. Journal, vol. xxvi. Gardien, tom. i. p. 443.

³ See case by Dr. Beatty, Trans. Assoc. Coll. Phys., vol. i., New Series, p. 116, and several cases quoted by Madame Boivin, tom. ii. pp. 17, 18.

⁴ See Burn's Principles of Midwifery, 7th ed., p. 96, note, and p. 401. Clarke on Diseases of Females, part. i. p. 213. Denman's Introduction, &c., 5th ed., p. 363. Ould's Midwifery, pp. 146, 147. Morgagni, epist. xlviii. art. 29. Arch. Gén., tom. ix. p. 389. Madame Boivin, tom. ii. p. 52, *et seq.*

me, I concluded that the disease must have been in existence for at least a year and a half. She had now deranged digestion, with loss of appetite and strength; her breasts, however, had rather increased in size, and there was some appearance of an areola on them; this, together with the character of the nausea, the tumid feel of the abdomen, and the absence of all sanguineous discharge for nearly four months, suggested to my mind the idea of pregnancy as a thing *just within the limits of possibility*, though extremely improbable; and in this light I spoke of it to a sensible female friend who was with the lady.

In the second week of April, she called my attention, with much anxiety, to what she called a lump in the lower part of the abdomen, on feeling which, I was almost satisfied that it was a gravid uterus; however, I merely assured her that this was not, as she thought, an extension of her disease; a few days afterwards, I was quite convinced that she was pregnant, and informed her husband of my opinion; on the 1st of May, to her utter amazement, she felt the motion of the child.

From the beginning of April, all her symptoms began to improve; the pain gradually diminished, her stomach ceased to be sick, her appetite returned, the vaginal discharge changed its character to that of mere serum totally devoid of offensive odor; and she really suffered as little uneasiness or discomfort as any woman in health, and in the seventh month of pregnancy, usually does, indeed less than many; however, the jagged state of the os, produced by the destructive ulceration, was just as before.

This calm lasted till the middle of July, when she again began to complain of a great deal of pain shooting through the pelvis, hips, and lower part of the abdomen; the discharge became semi-purulent, the motions of the child caused her great distress, and she suffered much from a burning sensation in the rectum; yet, strange to say, *she rather gained flesh, and her aspect was that of a woman in perfect health.*

On the 5th of August I was called to see her, at five o'clock A. M., and found the liquor amnii flowing away in large quantities, with slight pains, which continued at times during the day; but she got a good night's rest, and had no actual labor until after eight o'clock A. M. Next morning, the 6th, I saw her at eleven o'clock A. M., when the pains had become rather urgent,

and on examination, I found a coil of the funis in the vagina, and the left foot presenting at the os uteri. I determined to interfere as little as possible with the progress of the labor, and only gave directions for the administration of an enema, as the bowels required relief; the dilatation of the os uteri went on very slowly, until towards five o'clock P. M., when the presenting parts began to descend pretty quickly, the delivery was safely accomplished at half past five o'clock, and the placenta came away before six o'clock. There was no rupture of the os uteri, which I greatly apprehended, nor was there any hemorrhage worth noticing; it was remarkable that the pulsation in the funis continued throughout the whole labor, and the child was born with the heart still beating, and gasped a few times, but could not be kept alive. For three days after delivery there was great irritability of the stomach, which then ceased, and the lady's convalescence from the puerperal state was much as usual: the disease, however, continued to progress steadily, but almost to the last she retained her flesh and good looks.

In January, 1844, the disease penetrated the rectum, and opened it into the vagina; and on the 6th of February she was released from her sufferings.

Dr. Eve, of Georgia, U. S., has related a case¹ in which cancer of the uterus rendered labor tedious and severe, in a young woman of only twenty-eight years of age, very robust and stout, and to all appearance in most excellent health; and the child to which she gave birth was large and healthy. After her confinement, the cancerous ulceration made rapid progress, so that, in a few months, it opened the rectum into the vagina; and in eleven months after delivery, death freed her from her misery. It is remarkable in this case, that gestation proceeded to its termination so entirely undisturbed by such an amount of disease, which during the state of pregnancy, appears to have been checked rather than aggravated; as happened also in my case just related.

Dr. Oldham records three cases of labor complicated with ulcerating cancer of the womb; in one of which the uterus ruptured, and the patient died undelivered; the uterus was a mass of disease; the patient was thirty-three years of age. In a

¹ Edin. Monthly Med. Journ., Oct., 1847, p. 289.

second, the woman was forty, the os undilatable; craniotomy was resorted to, and delivery was accomplished, with little laceration of the cervix; the woman died in a month. In the third case, the woman was forty-two, had a favorable labor, and was easily delivered of a dead child at the full time.¹

Gardien expressly states that numerous facts within his knowledge have proved to him that women may carry their children to the full time, although laboring under cancer in the ulcerated state.² A most remarkable case has been recorded by M. Neyzonis, in which the woman died undelivered; the parietes of the uterus were found carcinomatous, and three inches thick near the fundus.³

9. *Cauliflower Excrescence*.—It is equally certain that cauliflower excrescence will not prevent conception, and has been found of a large size, dangerously complicating labor; as happened in the case of Margaret Pole, related by Sir C. M. Clarke,⁴ in which the tumor was, at the time of labor, large enough to fill the cavity of the vagina entirely, the symptoms of the disease having been present from the commencement of the pregnancy to its termination.

Some years ago, I was called to see a lady, whose whole vagina was filled with an immense crop of cauliflower, or warty excrescences, giving forth a profuse, and most offensive discharge; the uterus was found to be enlarging, and apprehensions were, in consequence, excited that the diseased growths had seized upon the uterus also, and were distending it. On examination, I found sufficient evidence to justify me in pronouncing the lady to be in the fifth month of pregnancy, which the event confirmed, and in due time she gave birth to twins. I heard afterwards that the excrescences were destroyed by the pressure in labor, and totally disappeared soon after.

10. *Prolapsus Uteri*.—Women have been impregnated, although afflicted with external prolapse of the uterus. M. Guillemot has written a very interesting paper on this subject, in which he has

¹ London Journal of Med. Sci., March, 1851.

² Traité des Accouch., vol. i. p. 430. See Raige Delorme, Dict. de Méd., tom. x. p. 464.

³ Dict. des Sciences Méd., tom. iv. p. 237.

⁴ Diseases of Females, part ii. p. 67.

collected, from various sources, nine cases of the kind, the first two of which are particularly remarkable, as examples of gestation accomplished where the prolapse was complete.¹ In the third case, impregnation occurred while the uterus was completely external.² The circumstances of this case were very remarkable. The woman was married at twenty years of age, and during twenty-one years, "son mari fit des tentatives infructueuses pour la rendre mère; enfin, au bout de ce tems là, il parvint à dilater l'orifice de la matrice qui était hors des grandes lèvres, et consumma l'œuvre de la génération." The account of the labor and delivery, &c., are full of interest. Another of the cases happened in the practice of the great Harvey, who gives us the following account of the matter: "And now, at this time, it (the prolapsed uterus) was large and dangling between her legs. It grew at last bigger than a man's head, being then a hard tumour, and hanging downe to her knees did much pain her, so that she could not goe, but upon all foure. I did suspect it to be a cancer of the wombe, and therefore did bethink my selfe of a ligature and cutting it off: but the following night an infant perfectly shaped, of a span long, was cast out of that tumour, but it was dead."³

It appeared to the writer advisable to enter thus fully into the statement of such unusual conditions, in which pregnancy may occur, lest a prepossession on our part, against the possibility of such occurrences, should act unfavorably, either by closing our eyes against the evidence before us, in extraordinary cases, or making us less careful in their examination from a preconception that pregnancy could not exist under such circumstances.

11. *Pregnancy without the Knowledge of the Woman.*—That a married woman, or any female who has indulged in sexual intercourse, may become pregnant without being aware of, or even suspecting her condition for several months after conception, is a fact too notorious to require further observation than the mere mention of it; the question to be considered here is, can a woman become pregnant in consequence of intercourse, of the

¹ Quoted from, 1. Archives de la Soc. d'Emulation; 2. Journal de Méd. et de Chirurgie, for 1775.

² From Chopart, Malad. des Voies Urinaires, vol. i. p. 389, note.

³ Anatomical Exercitations, p. 495, Ent's translation.

occurrence of which she was not conscious, and so, find herself with child, without being aware of having incurred the risk? Improbable, or even absurd, as such a supposition may at first sight appear, the possibility of such an accident is established by too many facts testified by high authority, to permit incredulity on the subject. The belief that consent and pleasurable sensation on the part of the woman are conditions necessary to conception, is now universally known to be without foundation in nature, and, of course, no longer influences legal decisions; formerly, however, it was otherwise; so that in case of rape, if pregnancy followed, it was presumed to prove consent, and it was so laid down by Dalton;¹ but Lord Hale says that this opinion of Dalton seems to be no law.² "That so absurd a notion, as that conception evidenced consent, should, in modern times, have obtained amongst any, whose education and intellect were superior to those of an old nurse, is, indeed, surprising; at this day, however, facts and theory concur to prove that the assentation of nature, in this respect, is no ways connected with violation of mind."³

"It is a fact," says Capuron, "which experience has more than once confirmed, that a woman may become with child while in a state of hysteria, under the influence of narcotics, during asphyxia, drunkenness, or *deep sleep*, and consequently without being conscious of it, or sharing in the enjoyment of the man who dishonors her:" and in proof, he mentions having attended a young woman who was impregnated while totally unconscious, being buried in a deep sleep produced by punch given her by her paramour.⁴ She became aware of her condition for the first time, when she felt the sensation of motion, in the fourth month. Fodéré expresses a similar opinion, and quotes several instances in which the occurrence took place; one of which is particularly remarkable.⁵

MM. Marc,⁶ Raige Delorme,⁷ and Devergie⁸ speak of such a

¹ Dalton, c., 160. See also 2 Just., 190.

² 1 H. H. 131. See also MSS. Sum. 334.

³ Barn's Justice, tit. *Rape*.

⁴ See Méd. Lég. relat. aux Accouchemens, pp. 57. 84.

⁵ Médecine Légale, tom. i. p. 497, *et seq.*

⁶ Dict. de Méd., tom. xxi. pp. 358, 359.

⁷ Ibid., tom. x. pp. 465, 466.

⁸ Médecine Légale, tom. i. p. 431. See also Smith's Forensic Medicine, p. 401.

fact, as established by experience. Dr. Gooch says "it is not necessary that the woman should be sensible at the time of impregnation," to which observation the following case is subjoined: "A maid at an inn, who was always thought to be virtuous, and bore a good character, began to enlarge in a way which excited suspicions of pregnancy. She solemnly declared that she never had connection with any man. At length she was delivered, and was afterwards brought before a magistrate to swear to the father; but she repeated her former declaration. Not long afterwards, a postboy related the following circumstances: that one night, he came late to this inn, put his horses into the stable, and went into the house; he found all gone to bed, except this girl, who was lying asleep on the hearth-rug, and, without waking her, he contrived to gratify his desires." "This shows," he adds, "that impregnation may take place without the knowledge of the female."¹

In reference to this question Beck remarks: "In females habituated to sexual connection, or where sleep is unnaturally produced, there is no doubt of its occurring; whereas in the opposite cases, the probability is greatly lessened;"² and in a note on this passage, he quotes the following case: "A pregnant female in her last moments solemnly declared, that to her knowledge she never had connection, but that a person in the family, some time previously, had given her some wine to drink, after which she fell into a profound sleep. She was not, however, conscious of anything having occurred during that state, but mentioned the circumstance as probably explaining her situation."³ A case very much resembling that related by Dr. Gooch was communicated to the writer by Mr. Cusack, which occurred under his own observation. A servant woman at an hotel in Nenagh, proved pregnant, and solemnly declared that she was not conscious of having had intercourse with any man. Suspicion, however, fell upon an ostler in the establishment, who subsequently acknowledged, that he believed he was the father of the child; that having found the woman in a deep sleep from fatigue, caused by

¹ *Compendium of Midwifery*, pp. 81, 82.

² *Elem. Med. Jurisp.*, 5th ed., p. 152.

³ *Mierius in Brendel*, p. 99.

long-continued exertion, and being kept out of bed two or three nights in succession, he had connection with her, and, as he believed, totally without her knowledge, as she did not evince the slightest consciousness of the act at the time, or recollection of its occurrence afterwards: the parties were married with mutual consent.

The writer once attended a patient who, even in her dying hour, protested in the most solemn manner, that she was not conscious of sexual intercourse; he is quite aware of how little reliance can in general be attached to such statements, and has already (p. 60) insisted strongly on that point; but when we recollect that delivery has occurred during sleep, without awaking the woman,¹ as I once witnessed, we cannot doubt but that coition, which is so much less likely to disturb, might be consummated during that state, with a female accustomed to sexual indulgence, without her being afterwards aware of it; especially if she have already borne children.

That such an event must be of very rare occurrence is certain, but we cannot altogether deny its possibility; and, therefore, while we have ample reason for refusing implicit assent to the statements of females who will, in ordinary cases of illegitimate pregnancy, deny the possibility of their condition with the most unparalleled effrontery, and the most solemn and imposing protestations, we should on the other hand recollect, that impregnation may *possibly* have been effected without their knowledge; so that, whatever we may think of their general credibility in other matters, in this, they may either try to deceive us, or be themselves deceived; we must therefore form our opinion, not by what we hear, but by what we can see and feel.

The celebrated case quoted by Bruhier, Fodéré,² and others,³ from the *Causes Célèbres*, to show the possibility of conception during a state of complete asphyxia or apparent death, is so generally known, as to render its relation here unnecessary.

There is an opinion very generally entertained in society, and

¹ For the details of some striking cases of this kind, see remarks on delivery without consciousness, in a future chapter.

² *Médecine Légale*, tom. i. pp. 500, 501.

³ Louis, *Lettre sur la Certitude des Signes de la Mort*, and *Cyclopædia of Practical Medicine*, vol. iii. p. 494.

which very often meets us in practice, that a woman who has no sexual feeling is necessarily barren: now, this is quite untrue; I have met with several instances of women who were utterly without sexual sensibility, and yet became pregnant several times.

Some years ago, I was consulted about his wife by a gentleman who was greatly dissatisfied because the lady, who was young and very pretty, was entirely devoid of sexual feeling. She afterwards told me herself, that as far as sensation was concerned, she was not even conscious of the act of intercourse: she has since had four children. Another lady, who had a very long and otherwise bad first labor, told me she knew the cause to be the *dead* condition of her womb; which she explained, by informing me that it was totally without sensation.

The mother of one of the Marshals of France, who had had several children, declared "qu'elle n'avait jamais senti que les douleurs de l'enfantement."

About three years ago, I was consulted by a lady, who had been some months married without conceiving; which circumstance caused her husband great annoyance, and was, I believe, a subject of much domestic unhappiness: she told me that she feared it never *could* be otherwise, as she was not only totally destitute of desires, but of all sensation from intercourse. In this month, February, 1854, she again consulted me and told me, that she had borne a living child, and miscarried twice since her former visit to me, and supposed herself again pregnant, but assured me that the same total apathy continued, just as before.

Devergie says:¹ "Il est, du reste, bien reconnu qu'une femme n'a pas besoin de ressentir du plaisir, pour être fécondée." The late Professor Hamilton² and Dr. Heberden,³ with many others, have borne testimony to the same effect.

12. *Imperfect Intercourse. Presence or Absence of the Hymen, &c.*—Cases of the kind, already noticed pp. 105, and 264, and to others, of which further reference will presently be made, have occurred too frequently to leave it doubtful that a woman may

¹ Médecine Légale, tom. i. p. 431.

² Pract. Obs., &c., p. 103.

³ Commentaries, &c., p. 207.

conceive, with whom intercourse has been only partially accomplished, or unsuccessfully attempted. It seems, therefore, almost unnecessary to remark, that the presence of the hymen, however perfect its condition, provided it be not totally imperforate, cannot be assumed or depended on, as a conclusive proof against the previous occurrence of impregnation; for, although it certainly ought to be considered as strong presumptive evidence in favor of virginity, yet, so many cases have been witnessed, and put on record by authors worthy of credit, in which that membrane has been found co-existing, not alone with pregnancy, but even with labor, that the fact no longer remains a matter of doubt. Meckel¹ remarks, that the hymen cannot be considered a certain physical sign of virginity, because it has often been found entire, not only in women who had frequently indulged in sexual intercourse,² but even in some who had brought forth fetuses advanced even so far as the seventh month,³ of which, he says, he has the preparation in his museum. That the integrity of the hymen might be consistent with the expulsion of a small fetus, the writer does not doubt; but he cannot help considering its remaining entire, after the passage of a full-sized child in the seventh month, as a very improbable occurrence; and he finds that Devergie,⁴ in referring to this case, states that the fetus was of five months, and enveloped in its membranes. The writer was once consulted by a young person, whom he found to be pregnant, and whose hymen was as perfect as it had probably ever been; but the opening through it was such as to admit the finger to pass without difficulty, and the girl acknowledged that she had, on more than one or two occasions, enjoyed the embraces of a very young gentleman, on whose youth, it appeared, she had relied for immunity from the usual consequences. The existence of the hymen, at the time of labor, has been observed by Ambrose Paré, Willis, Ruysch, Nægele, Bau-

¹ Anatomie Descriptive, &c., vol. iii. p. 735.

² Oslander. Abhandlung uber die Scheidenklappe, p. 24. "Milles causes étrangères au coit peuvent le détruire, et que la copulation n'en détermine pas toujours la rupture."—*Velpeau*, tom. i. p. 67. See also Metzger, by Ballard, pp. 251, 252.

³ Tolberg, De Varietate Hymenum, p. 14.

⁴ Méd. Légale, tom. i. p. 340.

deloche,¹ Mauriceau,² and many others: the cases related by the last two are particularly remarkable. Dr. Blundell met with four cases of impregnation, in which the hymen remained unbroken; the diameter of the vaginal orifice not exceeding that of the little finger: and he knew of three other cases, in which the male organ was not suffered to enter the vagina at all; yet impregnation took place from the mere deposition of the semen on the vulva.³ In the case related by Dr. Tucker, the aperture in the hymen was very little more than an eighth of an inch in diameter, and the membrane was sufficiently strong to resist the forcible impulse of the child's head, during several labor pains.⁴

Within the last year, I was consulted by a lady past forty, and married to her second husband. She had doubtful symptoms of pregnancy, and on attempting to make a vaginal examination, I found the hymen as perfect as it usually is; it allowed the finger to pass, but was thereby made tense. I had reason to believe that she cohabited in the usual way with both husbands.

Hildanus⁵ relates a case in which the husband sued for a divorce, because his wife could not admit his embraces; but she suspected herself to be with child: on examination by several eminent surgeons, the vagina was found obstructed by the hymen, which was very strong, and perforated by several small openings. The membrane was divided, and the husband satisfied; six months afterwards, the woman was delivered of a full-grown child.

On the other hand, I believe it is a matter of universal agreement, that there are many causes besides sexual intercourse capable of destroying this membrane, which, there is also good reason for believing, may, in some cases, have been originally defective, from imperfect conformation of the part.⁶ In a former chapter (p. 87), the imperforate hymen has been noticed, and its effect in inducing suspicion of pregnancy, by preventing the discharge of the cata-

¹ *Art des Accouchemens*, vol. i. ch. 3.

² *Maladies des Femmes Grosses*, tom. ii. obs. 489, p. 405, and obs. 583.

³ *Principles of Obstetrics*, pp. 65, 66.

⁴ See Merriman's *Synopsis*, 4th ed., p. 230. Several other cases are referred to in the same work, pp. 58-228. See also Davis's *Principles of Obstetric Medicine*, p. 104; Gooch's *Compendium of Midwifery*, p. 81; Paris and Fomblanque, vol. i. p. 203; and Smellie, *Collect.* xxxi. case 26, p. 62.

⁵ *Centuria* iii. obs. 60.

⁶ Meckel, *loc. cit.*

menia; and it is scarcely necessary to observe here, that in such a case, the mere discovery of the obstacle would be proof positive against the condition suspected.

Among the Jews, a discharge of blood, as the consequence of the laceration of the hymen *in primis nuptiis*, was considered so unequivocally the test of virginity, that it was made a subject of legislation, and the woman to whom this did not happen, was liable to be stoned to death.¹ Gardien mentions, that the Jewish custom prevails to a certain extent, at the present day amongst the Bedouin Arabs: and Mahon, on the authority of Chappe, speaks of a similar custom as still existing in Siberia, and in certain parts of Russia.²

It has been remarked by Fodéré, Mahon, and others, that the state of the hymen may vary much in the same individual, at different times, and under different circumstances; and the latter mentions a case where a man, not finding it existing in his bride, took great offence, but afterwards finding a totally different condition of the part, recognized his error, and was satisfied.³ Marc has recorded a very remarkable case illustrative of this, and as he says, showing that when the hymen is of the semilunar form, it may disappear for a time, and return again. "A young girl, not thirteen years of age, formed an illicit intercourse with a man, and became severely affected with syphilis, for the cure of which she was brought to the hospital of La Pitié. On examination by Dr. Serres and others, there was found extreme dilatation of the vagina, injury of the external genitals, and total absence of the hymen. She was cured, and then they were greatly astonished to find all the physical marks of virginity existing, especially a well-marked semilunar hymen. MM. les Docteurs Fournier, Pescay, and Marc were appointed by the Medical Society of Emulation to examine and report on the fact."⁴

Having on a former occasion noticed, as an instance of pregnancy under very extraordinary circumstances, a remarkable case recorded by Nysten,⁵ in which impregnation was supposed to

¹ Deuteronomy, chap. xxii.

² Médecine Légale, tom. i. p. 123.

³ Loc. citat., p. 121. See the statement of Buffon, as quoted by Mahon, tom. i. pp. 127, 129.

⁴ Dict. de Méd., art. Violation, by Marc, vol. xxi. pp. 353, 354.

⁵ Journal de Médecine par MM. Corvisart et Leroux, brumaire, an 11, p. 134, et seq. Quoted also by Gardien, tom. i. p. 526, note.

have taken place, in connection with several conditions calculated to render such an occurrence highly improbable, I recur to it now, principally for the purpose of expressing my disbelief as to its having been, in reality, a case of pregnancy. In the case alluded to—1. The supposed pregnancy was ovarian: 2. The girl was only thirteen years old: 3. She had never menstruated: 4. The hymen was perfect: 5. The vagina so contracted that it would scarcely admit the little finger: the organs of generation and the breasts like those of childhood. After her death, which occurred at the Hôtel Dieu, there was found, in the situation of the left ovary, a tumor which contained hairs, the crowns of molar and canine teeth, with some, both of the long and flat bones; and it is added, that pregnancy never was suspected. After many endeavors, I have been unable to obtain access to the original paper; but, from the above facts, as quoted by Gardien, I consider the case not to have been one of pregnancy; and think that the foetal structures discovered were not the products of conception in the individual, but were in all probability coeval with her, in whose body they were found, and produced by the original inclusion of one germ within another; as happened in the cases examined by Dupuytren,¹ Dr. Young,² and Mr. Highmore,³ in which foetuses were found in the bodies of boys.

Several instances have also occurred, in which women have been impregnated, although in a state rendering ordinary intercourse impossible, in consequence either of original malformation, or accidental closure of the vagina from the effects of bad labor, or other causes. Mr. Burns quotes a case from Portal,⁴ in which a girl, who had only a very small aperture at the vulva for the evacuation of the urine, and whose menses came from the rectum, nevertheless became pregnant; before delivery, however, the orifice of the vagina appeared, and she bore the child in the

¹ See Dublin Journal of Medical Science, vol. iv. p. 294, where the particulars of the case are given from the *Recueil des Mém. de la Fac. de Méd. de Paris*.

² *Med.-Chir. Trans.*, vol. i. p. 234.

³ Case of a Foetus found in the Abdomen of a young Man, by Nathaniel Highmore, M. R. C. S. L., 4to. Longman and Co., 1815. The foetus is deposited in the Museum of the College of Surgeons in London, and a cast of it is in the writer's possession.

⁴ *Précis de Chirurgie*, tom. ii. p. 745.

usual way. Louis relates a case almost exactly similar, and others are given by Gardien.¹

Chapman² relates the case of a woman who was so exceedingly malformed about the orifice of the vagina, that even up to the time of labor, which took place about the seventh month, she did not entertain a suspicion that she could be with child, there being in the situation of the external orifice nothing more than a small slit through the integuments, merely large enough to admit the point of the finger; delivery by the vagina being found impossible, and the child's head pressing towards the anus, an incision was made through the rectum into the vagina, and delivery effected per anum. In a case related by Peu,³ the orifice of the vagina, in consequence of adhesions resulting from a former bad labor, was contracted to such a degree, as to leave room only for the passage of a very fine probe. In this state the woman married a second time; but her husband, after many fruitless attempts, was unable to effect intercourse; notwithstanding which, however, she became pregnant, and her delivery was accomplished by dividing the adherent surfaces. Dr. Hamilton mentions having met with four instances where women had become pregnant, in whom the external orifice was so small that it could barely admit the introduction of an ordinary quill.⁴

13. *Secondary Ovum, Supposed Abortion, Blighted and Retained Ovum.*—In this section, it is intended to consider, first, a condition of the pregnant woman which presents considerable embarrassment in the investigation of her real state, consisting in the retention of an ovum in the uterus after the expulsion of another, in cases of twin conception; a condition which is, at once, very liable to escape detection, especially in a person of full habit, and which may either lead to severe, although, perhaps, quite undeserved censure, against the medical attendant, or to still more unmerited and injurious aspersions on the fair fame of the patient, should the accident occur under peculiar circumstances. Secondly, it will be desirable to notice those cases in which abortion is supposed to have occurred, when that accident has really

¹ *Traité des Accouchemens*, tom. i. p. 87, *et seq.*

² *Treatise on Midwifery*, case xxxiv. p. 206.

³ *Pratique des Accouchemens*, p. 245.

⁴ *Practical Observations, &c.*, part ii. p. 121.

not happened; and thirdly, those instances in which the ovum is blighted, but is afterwards retained in utero for many weeks or months; such anomalous conditions being, not unfrequently, combined under a variety of forms.

The occurrence which I propose to describe under the designation of secondary ovum, happens but rarely; but for that very reason, in addition to the others above noticed, it deserves our especial attention to its accompanying circumstances, which are usually these: A woman proceeds regularly and healthily through the first three or four months of her pregnancy, and then being seized with symptoms of abortion, she expels an ovum, is told that she has miscarried, and of course looks upon it as certain that she is no longer pregnant. She soon resumes her usual avocations, but is at first surprised that she is still as large as before the accident, and by and by, she feels some motion within her, and suspects it to be quickening; but, as she had already miscarried, she thinks something unnatural is going forward, seeks for advice, and is found to be still pregnant; and at the time she originally calculated on for her delivery, she gives birth to a full-grown healthy child. The possibility of such an occurrence should make us invariably adopt the precaution of carefully examining the state of the uterus, after the expulsion from its cavity of any organized, or other substance, during the state of gestation; and if we find the organ unexpectedly large, we should act with great caution, both as to the opinion we pronounce on the state of the patient, and in the treatment we adopt, which should be of such a kind as would not be likely to interfere with the continued vitality of an ovum. The various forms, under which such cases may present themselves, will be, perhaps, best illustrated by a few instances of the occurrence.

A lady of the writer's acquaintance, when in the fourth month of pregnancy, went on an excursion to a favorite place of resort for parties of pleasure near this city, and after walking a good deal, became aware that she had a sanguineous discharge, with other symptoms of miscarriage, in consequence of which, she was removed home: on the arrival of her medical attendant, an ovum of about four months was found in her dress. In a few days she was well again, and no suspicion was entertained, but that she had parted with the contents of the uterus; she re-

marked, however, that her size had not diminished, but was, on the contrary, increasing. Soon afterwards, to her infinite surprise, as well as that of all parties concerned (for her attendant discountenanced all idea of the possibility of her being still pregnant), she distinctly perceived foetal motion, and at the expiration of the time at which she had originally expected her confinement, she gave birth to a healthy full-grown child.

Dr. Ingleby mentions¹ a case, in which, after a long-continued hemorrhage, a diseased placenta (of the grape kind) was cast off, but without any apparent foetus; the os uteri closed, and to the surprise of all parties, the patient was delivered, a few weeks afterwards, of a mature child and secundines. Dr. Ramsbotham, after describing this state of the female with his usual clearness and accuracy, relates a case of the kind which occurred in his own practice, and another which was communicated to him. In the first, the lady miscarried on the 5th of November, of an ovum in the third month, with hemorrhage before its expulsion, but none afterward; she continued to increase in size, and felt satisfied that she was still pregnant; on the 4th of May she was delivered of a full-grown living daughter. In the other instance, abortion happened about the time of quickening; between eighteen and twenty weeks afterwards, the patient was taken in labor, and sent for her attendant, who said it was impossible, as he had attended her only five months before, when she miscarried, and that if she was in labor, it could not be at the full time. But he found the fact as stated to him; she was presently delivered of a full-grown male child, and did well.²

Mr. Chapman³ has recorded a case in which this circumstance occurred so late in pregnancy as the close of the seventh month. On the 9th of October he was called to see a lady who was supposed to be about seven months pregnant, not having menstruated since the beginning of March. She was now seized with labor pains, and before Mr. Chapman's arrival something had been expelled, which, on examination, he found to be a perfectly healthy placenta, of the size it usually is *between five and six months*, to

¹ Facts and Cases in Obstetric Medicine, p. 242.

² Pract. Obs., &c., part ii. p. 378.

³ Med.-Chir. Trans., vol. ix. p. 194.

which were attached the membranes quite perfect, but of a dirty yellow color, flattened, and closely embracing a small foetus, not longer than it usually is *between three and four months*, without any liquor amnii, although it did not appear that any could have escaped. The uterine action subsided, and the hemorrhage ceased, but the patient continued as large as before, felt the foetal motions as strongly as ever, and went on well until the 10th of December, when she gave birth to a fine full-grown girl, and recovered well.

A circumstance mentioned in the relation of the above case, which the writer has frequently had occasion to observe, is deserving of notice, namely, the greater degree of development and maturity of the placenta than of the foetus; another instance of which will be noticed presently. It appears that, in cases of this kind, the placenta continues partially to maintain its connection with the maternal system, and to grow after the nutrition of the foetus has been arrested.¹

There is a case related by Harvey, which is usually considered, and constantly quoted, as an example of superfœtation, which Harvey himself expressly calls it; but to me it appears to admit of another explanation, and that it may, with equal propriety and probability of truth, be considered an instance of secondary ovum, like some of those just related. "A certain servant-maid," he says, "being gotten with child by her master, to hide her knavery came to London in *September*, where she lay in by stealth; and being recovered again, returned home; but in *December* following, a new birth (for she had a *superfœtation*) did proclaim the crime which she had cunningly concealed before."² Now it is to be observed, that there is here no mention made of the degree of maturity of either of the children; and, without knowing this, it appears extremely probable that the case was similar to Mr. Chapman's above noticed, in which one child was expelled in October, and the other in December, or Dr. Jameson's, to be related presently (p. 307), in which one child was born in February, and the other in April; and I should say precisely the same of the case quoted by Harvey immediately afterwards, from Aris-

¹ See a remarkable case in Ruysch, *Advers. Anat.*, vol. i. obs. xiv.

² On the Generation of Animals, *Ent's Trans.*, p. 479. *Opera*, 4to. ed., p. 547.

tote, who subjoins an observation in which such an occurrence is accurately described. "It happened," says Aristotle, "to another woman, that, having brought forth a child in the seventh month, she, at the end of her full time, brought forth two more; the former child was dead, but the last two lived. Some women, also, who have miscarried, having conceived of twins, have expelled one of them prematurely, but brought forth the other, at the full time."¹

The following very remarkable and interesting case occurred in this city, a few years since, to Dr. Jameson, to whom we are indebted for an account of it.² Mrs. R. was delivered of a healthy male child on the 13th February, 1842, which she nursed. On the 3d April, Dr. Jameson was summoned, and found her in labor, which soon terminated in the expulsion of a blighted foetus, between eight and nine inches long, attached to "*a placenta which appeared to be fully as large as one belonging to a full-grown foetus, and healthy.*" The previous labor had been in every respect favorable, and the placenta expelled in about ten minutes, without any subsequent hemorrhage; but she remarked that her size remained larger than it ought.

Her last menstruation occurred at the latter end of April, 1841, between which and the 13th February, 1842, when the living boy was born, there intervened at least (the ordinary term of gestation) forty weeks. So that the second child, which was not expelled until the 3d April, must have sojourned in utero forty-seven weeks without undergoing decomposition, although it must have been several months dead; a fact which has been already noticed in several cases where children were long retained in the cavity of the abdomen, some account of which has been given in the section on extra-uterine foetus, p. 286, *et seq.*; and another case, that of Bridget Smith, will be detailed in the observations on protracted gestation, where a morbid ovum was retained in utero about forty-five weeks.

With regard to the subject of *supposed abortion*, the instances are by no means unfrequent in which we are consulted by women who, having had reason to think themselves two or three months

¹ Hist. Anim., lib. vii. cap. 4, quoted by Harvey *ut suprâ*.

² Dub. Med. Journ., vol. xxii. p. 15.

pregnant, have then had symptoms of miscarriage, of such a kind as to induce a very positive belief that the accident had absolutely occurred when it had not; the substances expelled not having been examined by any competent judge, who might afford us precise information as to whether the ovum had been really thrown off or not. If this should occur to a woman in whom the early symptoms of pregnancy are habitually very feebly manifested or obscure, or if these symptoms, being of the usual kind, decline after the accident, as they sometimes do for a time, especially when there has been a considerable hemorrhage, it may be extremely difficult, perhaps impossible, at those early periods, to determine whether pregnancy still continues, and still more so, whether the vitality of the ovum is preserved.

If the irritability of the stomach has ceased; if the breasts have become flaccid, and have lost the tingling sensibility previously experienced; if certain peculiar sensations are no longer felt; if the size of the abdomen has diminished; and if there has been, since the time the accident was supposed to have taken place, a vaginal discharge having the characters of an uterine hemorrhage, or of ordinary menstruation; it is almost beyond all doubt that gestation is not proceeding naturally: but it is only by a careful examination of the uterus, both externally and internally, that we can hope to ascertain, satisfactorily, whether that organ still retains the product of conception; and even thus, with all our care, we may be disappointed; should we, however, come to the conclusion that it does, or remain in doubt on the subject, we should act on the presumption that the ovum may still be matured, and adopt such measures as are best calculated to insure such a consummation.

Many such cases have come under my observation, into the details of which I deem it unnecessary to enter, and will therefore only allude to one, in which there appeared very little probability of gestation proceeding. A lady, when in the third month of pregnancy, after driving a great deal through town during two days, was seized with profuse uterine hemorrhage, accompanied by severe rigors, and pain in the back, after which, some ounces of a serous fluid, resembling the liquor amnii, were discharged; this was followed by diminution in the size of the abdomen and breasts, and a partial subsidence of the irritability

of the stomach, from which, the lady told me, she never suffered much till after the time of quickening, up to which period she had never experienced, in more than a trifling degree, the usual symptoms of pregnancy with any of her children; on examination per vaginam, I found the uterus apparently still retaining the characters of gravidity, the general symptoms of which, however, remained in complete abeyance for nearly a month, during which she was kept in a state of absolute rest, and other suitable measures were adopted; at the end of that time, the symptoms of pregnancy had evidently returned, and became more distinct; the abdomen was increased in size, soon afterwards, quickening occurred, and she went to her full time and bore a living child. Or again, it not unfrequently happens, that about the eighth or tenth week, symptoms of abortion present themselves; we find the patient with hemorrhage and periodical pains; under the influence of which the os uteri is opened, and the ovum pushed down so low, that we can pass the point of our finger round part of it, which is even a little protruded from the os uteri, but it is not expelled, nor can we get it away; next day, or the next but one, when we surely expect its expulsion, we find, on the contrary, the os uteri more closed, and the ovum less within reach, and the following day, perhaps, we cannot feel it at all; and so the matter remains; the patient having, from time to time, more or less discharge, the symptoms of pregnancy disappear, and at length, after perhaps several weeks, the ovum is discharged and recognized; or, as I have often indeed found, it never comes away in a bodily form, so as to be recognized; but is gradually decomposed and flows away in the uterine discharges, or perhaps passes unobserved when the bowels are acted on.

Under such circumstances, the practitioner, however watchful, or however skilled, will often find himself much embarrassed, and really unable to pronounce, with any reasonable degree of confidence, as to whether the woman has miscarried, or still retains the product of conception. I know of no class of cases more unsatisfactory or puzzling.

A case which occurred to me some years since, illustrates a remark just made so forcibly that I will relate it here. I attended a lady in a miscarriage in the fifth month, the foetus was expelled, but, after waiting several hours, and using every means, the

placenta could not be got away ; no hemorrhage nor any other untoward accident occurred. I had with her an intelligent and experienced nurse, to whom I gave particular directions to watch closely the appearance of every discharge, and to keep for my inspection anything solid that she might see ; I continued my visits for more than a month, and the nurse remained longer in attendance, but nothing like the placenta ever made its appearance.

Another condition is that in which pregnancy proceeds regularly for a few months, and then has its progress arrested by the death of the ovum, with or without symptoms of miscarriage ; sanguineous discharge, however, being generally present. Under such circumstances, the following changes are generally observed in the condition of the patient : The mammary turgescence subsides, the color of the areola fades, and others of its characteristics diminish in distinctness ; there is felt a sensation of coldness in the abdomen, the size of which decreases, and the uterine tumor, if before perceptible, is found to have diminished in volume ; the morning sickness ceases, the dusky color of the vagina disappears, and occasionally, the uterine tumor becomes not only smaller, but much harder. On the 9th of August, 1840, I was requested to see a lady, who in consequence of some unhappy domestic dissension, was just then separated from her husband, and was about suing for a separate maintenance, which would be influenced by her being pregnant, which she very positively professed to be. She told me that her last menstruation had taken place on the 18th of March, and that she had felt foetal motion on the 7th of August. She was a person of a very wayward, and I believe, violent temper, and did everything in her power to prevent my making a satisfactory examination : however, my opinion was that she was pregnant ; but I was not altogether free from doubt, and as the case was likely to give rise to a lawsuit, it was thought desirable by her father to have a consultation ; and eight days after, viz., on the 17th, I visited her with another practitioner, when I found the pre-existing evidences of pregnancy less distinct ; the abdomen was smaller, the mammae more flaccid, and what little appearance of areola there had been, was now less ; and my medical colleague frankly gave me to understand, that he thought I was mistaken in the case ; I remained of

my former opinion. On the 15th September, the evidences of pregnancy were still diminishing; and on the 6th October, they had so completely disappeared, that my colleague thought the question settled: but on examining per vaginam, I felt distinctly the anterior section of the cervix uteri bulged out and thinned, and I thought I could distinguish the divisions of the bones of a foetal head. On the 9th, the mucous plug of the cervical canal was discharged; and on the 17th a dead, and partially decomposed foetus was expelled, which appeared to have acquired a growth of about five months.

The blighted ovum may, under such circumstances, be retained for an indefinite time, and during its sojourn in utero, a train of anomalous symptoms continues to harass the patient, and render her doubtful, and anxious as to her situation. Some observations on this subject have already been made at p. 142, and a striking case of the kind detailed; to which I shall now subjoin one or two others, the circumstances of which were more peculiar, and in many points of view not less interesting than important. A lady who menstruated in the last week of July, began about the middle of August, to exhibit unequivocal symptoms of pregnancy, which proceeded regularly till the middle of October, when indications of threatened abortion appeared with pain, and the repeated expulsion of large coagula and substances of various appearances. After this, the previously existing symptoms of pregnancy entirely disappeared, and it was supposed that miscarriage had occurred, and that the ovum had escaped unnoticed, amidst the masses of coagula. The lady resumed her ordinary habits, and went into society as usual, without experiencing any uneasiness, or unhealthy symptom, except irregular uterine discharges, which were supposed to be menstrual; so matters proceeded until the 7th of January, when, after a long drive, she was seized with periodical pains accompanied by smart uterine hemorrhage, in consequence of which I was sent for. I found the os uteri open and an ovum partly protruded through it; this I succeeded in disengaging and bringing away: on examination it presented the general appearances, as to size, form, and growth of the foetus, of an ovum of *less than two months*, but the placenta was as large and as much formed as it should be *at three months*, and was moreover quite unhealthy, being throughout affected

with what is usually called the tubercular state of that organ; the foetus seemed perfectly healthy, but very small; and the umbilical cord was only about half an inch in length, and much hypertrophied, being suddenly enlarged, on leaving the placenta, to three or four times its natural diameter, and again, as suddenly contracted almost to a thread, where it joined the abdomen of the foetus. See sketch below from the preparation in my museum.

On the 16th of June, 1839, I was requested to visit Mrs. M. in consequence of her being, as was supposed, threatened with premature labor at the sixth month.

She had menstruated last in the middle of December; soon after which, she considered herself pregnant. In February, she had sanguineous discharge from the vagina, which continued till April, and then subsided, but had again returned within the last

Fig. 8.



week with pains. She quickened, as she thought, at the usual time, and told me she had felt the foetal motions within the day or two preceding my visit; but, when questioned closely, she seemed doubtful about these movements. She was a stumpy, fat,

flabby woman, about forty, and gestation had never proceeded healthily with her. On examination, I found the abdomen full, soft, and puffy, the umbilicus depressed, and the uterine tumor was to be felt obscurely behind, and nearly on a level with the pubes; the breasts were flaccid, and had merely the sign of a dead areola.

Per vaginam, the os uteri was found soft and very open, the cervix much shortened, and the body of the organ evidently containing something. I gave it as my opinion, that pregnancy had not healthily advanced so long as she supposed, and that she must have been mistaken about the foetal motions: the husband here observed, rather sharply, that she must be either at least five months pregnant, or not so at all, as they had not cohabited in the interval, on which, I explained to him that she might have conceived at the time supposed, but that if she had, the conception had perished at an early period, and would probably come away after a little in a blighted state. That evening, pains recurred, and the following morning a substance about as large as a turkey's egg was discharged, which, on examination, proved to be an ovum of about two months' growth with its coats tuberculated and hypertrophied, so as to be in some parts more than half an inch, thick, and very solid: the inner surface was studded over with tumors of various dimensions and elevations, and the foetus, which was about the size of a small horse-bean, and shrivelled, was suspended by a very short funis from the centre of one of these tumors. This ovum is preserved in my museum.

Dr. Ingleby tells us of a woman who considered herself to be in the third month of pregnancy; soon afterwards, she lost every symptom of that condition (amenorrhœa excepted), but still felt convinced that she was pregnant; at the ninth month labor came on, and a foetus of apparently three months was expelled; it was quite healthy, but the placenta was diseased.

Such cases as the above possess an interest and a demand on our attention of a very important kind, as illustrative of the necessity for carefully examining into the state of the foetal appendages before we venture to pronounce an opinion on the time that has elapsed since conception, merely from the size or general appearance of an ovum shown to us; for here we have, in one instance, an ovum, the size of which, and that of the con-

tained foetus, would indicate a period of *less than two months'* pregnancy, whereas *five months* had really elapsed from the time of conception, for the parties had not cohabited since the time of the threatened abortion; in another case, under the same circumstances, a foetus of still smaller dimensions was expelled after six months' gestation; and again, in a third instance, an ovum of *three months'* growth was expelled *nine months* after conception. Now, in these cases, had the husband happened to die, or to have gone from home shortly after the time of conception, the female might have sustained, though most unjustly, a severe injury to her reputation; in illustration of which remark, I will relate the particulars of a case which came lately under my observation.

A lady, who was married in the month of March, menstruated up to June, and not after; in September, her husband went abroad, leaving her, as was supposed, in the third month of pregnancy, of which she had all the symptoms; on the 4th of November, and again on the 2d of December, she had some sanguineous discharge, which was looked on as a return of the catamenia, and it was now concluded that she was not pregnant, but irregular; these discharges, however, did not recur until the middle of March of the following year, that is, nine months after the last regular menstruation, when an ovum was discharged of apparently two and a half months' development; the consequence of which was a conviction on the part of some members of her family, highly derogatory to her fair fame; however, before proceeding any further the ovum was, fortunately, shown to a judicious medical friend, who, wishing to have his own judgment in so delicate a matter fortified by the opinion of another, submitted the ovum to me for examination, and the real nature of the case appeared at once manifest; the envelopes of the ovum were in a morbid state, thickened and tuberculated, and had evidently been long separated from their vascular connection with the uterus; the umbilical cord, also, was diseased at its placental end, where it was expanded into a lotus-shaped sac filled with a brownish serum.

Of the true history of the case there seemed to me no doubt; the lady had conceived in all probability soon after the last regular menstruation in June; and about the time of her husband's departure in September, the ovum was blighted, and miscarriage

was threatened in November, and again in December, but did not take place (as it must be recollected happened in the other cases just related); and the blighted ovum, having lost its vitality and uterine connection, ceased to grow, but was retained in utero until the ninth month from the time of conception, when it was expelled in the morbid state already described; as happened in Dr. Ingleby's case above quoted. (See also p. 142.)

This explanation quite satisfied the medical friend of the family, and set at rest all the undeserved suspicions entertained against the lady; who might, otherwise, have had to encounter a very painful ordeal. This subject will again be noticed, when we come to consider the period of human gestation.

Another anomaly of very rare occurrence is that in which during the sojourn of the blighted ovum in utero, a new conception takes place, and both products are retained, and expelled together. (See remarks already made on this subject, pp. 106, *et seq.*)

It appears in conclusion only necessary to allude to another kind of relation which a blighted ovum, existing in utero at the same time with a healthy one, may observe with regard to the latter; along with which it may remain during the whole term of gestation, and be expelled with it at the time of labor, or immediately afterwards; having either formed a distinct attachment to the uterus by a completely separate placenta of its own, or being connected with a placenta closely united with that of the healthy child. In such a case, there is often a great disparity in the size of the foetuses, one being matured, healthy, and of full size, while the other is small, flattened, and atrophied; a circumstance which has been by many taken as a proof of superfœtation, with which it has no relation; both foetuses were, no doubt, simultaneously conceived, and continued for a few months to be equally developed, when vitality was extinguished in one of them; and it altered and decayed while the other grew to perfection. A specimen of the first kind is preserved in the writer's museum; about half an hour after the birth of a fine full-grown child, the blighted ovum was discharged, containing a foetus about six inches in length, pressed perfectly flat and attached to a thin and atrophied placenta, which, as well as the foetus itself, were of a slight straw

color; and Cruveilhier¹ has given a representation of the second variety. (See Fig. 9.)

In such cases, it will generally be found, on inquiry, that there had been, at some period of the gestation, most frequently about the third or fourth month, symptoms of miscarriage, but no ovum thrown off, which, from the intimate connection existing between the two, could not well happen without the dislodgment of both; had they been separate, the circumstances would, probably, have been those described in the first part of this section, p. 303.

Fig. 9.



On this subject there is a passage in Denman, which will not be without interest here:² "A child in this condition may be

¹ *Anat. Pathol.*, liv. vi. pl. vi.; see also Ingleby's *Facts and Cases*, &c., p. 241; *Lond. Med. and Phys. Journ.*, vol. xvi. p. 53; *Glasgow Medical Journal* for Oct., 1833, p. 338; Ramsbotham's *Pract. Obs.*, part ii. p. 379.

² *Introduction to Midwifery*, 5th ed., p. 619.

expelled with the living one, or it may perchance be detained for several days or weeks before it is expelled. Of this I have known several instances, but the following letter, written to the much respected lady of Sir Walter Farquhar, containing a detail of the attending symptoms in a case of this kind, judging it may be of some use, I have permission to transcribe. It certainly does explain the circumstances which have occurred in many of the cases of supposed superfœtation which have come to my knowledge.

“ ‘ I should have written to you some time ago ; but, for the last three months of my being with child, I was scarce able to do anything, and it was thought I should never recover. From the time of my being three months gone with child, every person that saw me concluded I must have twins. Between five and six months, I met with a great fright that nearly deprived me of my senses, and from that time, my size gradually decreased ; so that, at nine months I was not so big as when between five and six ; and every two or three weeks was threatened with losing my little one. I believe nothing prevented me from miscarrying but laudanum, which I took frequently, and in large doses.

“ ‘ On the 11th of February, I was delivered of a most delightful girl, though her size by no means answered the expectations which might have been formed of her from my looks. Still I remained in great torture. On the 21st, my life was despaired of ; but the morning of the 25th brought me great ease ; for, on that day, there were born the head and parts of a child that had just the appearance of a miscarriage at four months. I continued very weak and low, but am now, thank God, almost as well as usual. Jamaica, May 30th, 1772.’ ” (See also Dr. Jameson’s case, already noticed, p. 307.)

CHAPTER XII.

SPURIOUS OR SIMULATED PREGNANCY.¹

UNDER this designation, we have to notice a condition of the female system of a remarkable kind, most frequently observed about the turn of life when the catamenia, becoming irregular, previous to their final cessation, are suppressed for a few periods, and at the same time, the stomach being out of order, nausea or vomiting is experienced, the breasts enlarge, become sensible, or even slightly painful, and sometimes a serous, or sero-lactescent fluid exudes from the nipples and orifices of the areolar tubercles; the abdomen grows fuller and more prominent, especially in women of full habit, and constitutionally disposed to *embonpoint*, and the abdominal enlargement progressively increases, partly from deposition of fat in the integuments and in the omentum, but still more, from the distension of the intestines by flatus, which passing from one part to another, communicates a sensation so like that produced by the motion of a foetus, that the woman is sincerely convinced that it is unequivocally so; the nervous system is generally much disturbed, and the woman feels convinced that she is pregnant; an idea which, at the time of life alluded to, is cherished by the sex with extraordinary devotion, and relinquished with proportionate reluctance; often strangely deluding themselves with the idea that pregnancy would establish a claim to youthfulness; and, what is still more strange, the medical attendant sometimes shares the delusion and encourages the belief. A case has been already alluded to (p. 123), in which a lady persisted in entertaining a conviction of this kind for nine years, and her physician was of the same opinion; not unfre-

¹ By some called simulated pregnancy, by others pseudo-pregnancy; the *fausse grossesse nerveuse* of the French writers, or *grossesse simulée, par illusion pure*.

quently, at the end of the supposed gestation, the delusion is rendered complete, and almost assumes the character of reality, by the occurrence of periodical pains strongly resembling those of labor.

This kind of imitative labor, it will be recollected, has been frequently observed in cases of extra-uterine gestation; under which circumstances, the uterus, although not containing the product of conception, enlarges considerably, forms the decidua, and at the end of the ordinary term of gestation, takes on contractile action; and in spurious pregnancy, the uterus occasionally so sympathizes with the conceptive nîsus, or generative excitement, kindled in the system, that it increases in size; and, were an opportunity of examination afforded, it seems highly probable that we should find its vessels enlarged, and other alterations, more or less resembling those observed in pregnancy.

This condition, although in most instances occurring at what is usually called *a certain age*, is by no means confined to that period of life; I have met it in young women¹ who had children both before and afterwards, and in whom menstruation continued its usual periodic returns with perfect regularity; though this function is very apt to be disturbed, or even suspended, which, however, is not usually the case. Schmitt expressly mentions, that the subject of his 13th case, 1st div., was "a very young woman," who, soon after marriage, had suppression of the menses, enlargement of the abdomen, &c., and, at the end of nine months, had pains like those of labor, but with no result, as she was not pregnant." If menstruation be suppressed, as in this case, it adds much to the difficulty of the diagnosis. "I am acquainted," says Harvey,² "with a young woman, the daughter of a physician, with whom I am very intimate, who experienced in her own person all the usual symptoms of pregnancy; after the fourteenth week, being healthy and sprightly, she felt the movements of the child within the uterus, calculated the time at which she expected her delivery, and when she thought, from further indications, that this was at hand, prepared the bed, cradle,

¹ As did also Dr. Gooch. See his cases vii. and viii.; Diseases of Females, p. 226; Dr. A. Hamilton, Female Complaints, p. 125; and Schmitt's 13th case, 1st div.

² Works, Syd. Soc. ed., p. 528.

and all other matters ready for the event. But all was in vain, Lucina refused to answer her prayers; the motion of the foetus ceased; and by degrees, without inconvenience, as the abdomen had increased, so it diminished; she remained, however, barren ever after."

But at whatever age it may occur, I know of no combination of circumstances more embarrassing to the practitioner, or more likely to render it difficult for him to form a decided, and at the same time, correct opinion, or to satisfy the anxious doubts, or combat the determined prejudice in the patient's mind as to her state; for, as Dr. A. Hamilton observes, she "acquires the most accurate description of the breeding symptoms, and with wonderful facility imagines that she feels every one of them," and so considers herself entitled to insist peremptorily on being with child; any doubt of which, she considers an affront, or indeed almost as an insult, and resents ungraciously any attempt made to undeceive her, as tantamount to an imputation on her veracity; and, say what we may, she never will be convinced. I do not think I ever met a single instance in which the medical attendant succeeded in removing the delusion from the patient's mind, by any explanations or arguments he could offer; in fact, the woman, for the time, labors under a complete monomania; and the length of time during which women so affected will persist in maintaining the delusion under which they are laboring, would be incredible, were not the fact frequently brought under our observation. I have known them remain perfectly persuaded of their pregnancy for one, two and three years; and in one instance, both the lady and her physician assured me that the motions of the child had been distinctly felt for nine years.

I remember to have read, somewhere, of a lady who went to consult Dupuytren, declaring that she was then eighteen years pregnant, and requesting to know from him what he would advise her to do, under such peculiar and embarrassing circumstances. "I think, madam," said the Baron, "that the best thing you could do, would be to swallow a private tutor for your son, or his education will be sadly neglected."

On the night of the great fall of snow which occurred here, February 1st, 1831, I was called to see a lady, who, before morning, was delivered of a dead and partially decomposed child;

when I was leaving, she expressed her regret at the severity of the night, and said, jokingly, that she hoped the weather would not be so inclement about Christmas.

She sent for me in August, to prescribe for her, and told me she had quickened, and that she expected to send for me about Christmas Day. I saw her several times in the interim; she grew gradually larger, and when December arrived, looked very large indeed. On the 26th she requested my attendance, and when I arrived at 11 o'clock A. M., her husband, a medical practitioner, told me that she had been in labor all the morning; I found her sitting by the drawing-room fire, with such urgent pains, that I advised her to retire to her bed-room, where I soon after visited her.

On laying my hand on the abdomen during a pain, it presented all the size, form, and tension that I might have expected in a woman at the full time; but as soon as the pain and effort subsided, to my great astonishment, I found that I could press in the abdominal integuments almost back to the spine, without encountering any solid tumor; and on making a vaginal examination, the uterus was obviously unimpregnated.

I now stated my opinion, that she was not pregnant, to the husband, who at once assured me that I must be mistaken, as he had repeatedly felt the motions of the child as distinctly and strongly as ever he had in his life; and so also said the lady; but she was not pregnant. Slight appearances like menstruation had occurred irregularly throughout the supposed pregnancy.

After this, she remained in very bad health for some months; but, in the course of the following year became pregnant, and in due time, gave birth to a stout, healthy son.

On another occasion, my immediate attendance was required by a lady of about fifty, and mother of several children, with the last of which I attended her about two years before. On my arrival at her house, she told me that she had been several hours in labor, and that the pains had latterly become so urgent, that she was apprehensive of being delivered before I should arrive; an opinion in which her nurse-tender, a woman of experience, coincided; and I should add that it was just the time at which she had previously informed me that she expected to require my assistance. I found that she certainly had sharp periodical pains

accompanied with some effort, but on laying my hand on the abdomen, I found it soft and puffy, the umbilicus greatly sunk in, and no uterine tumor; in short, she was not pregnant at all. For the first three months of her supposed pregnancy, the menses were suppressed, but afterwards returned at irregular intervals; quickening was supposed to have taken place about the beginning of the fourth month, the abdomen increased in size, and the internal motions continued to be felt up to the time of labor; but the lady remarked that they were not so strong or distinct as she had been accustomed to feel them in former pregnancies, *nor of the same kind*, but she considered them as being certainly those of a child.¹ This dissimilarity in the character of the sensation of motion is so constantly observed in such cases, that we should always be particular in our inquiries on the subject, and bear in mind the curious fact, that these spurious motions may be not only perceived by the woman, but seen and felt by others. (See pp. 126, *et seq.*) The case of Joanna Southcott, already referred to, pp. 127, 140, whether we regard it as a delusion or imposture, was probably one of the most extraordinary instances of the kind ever recorded.

Sometimes this condition of the system gives rise to the suspicion of dropsy (as in the case of Mary Gibaud, to be related presently), especially when accompanied, as it often is, by œdema of the feet and ankles, as noticed by Sydenham,² who says "it proceeds from flatus, and, besides a swelling, causes the signs of pregnancy, and happens chiefly to widows, or women that did not marry till they were advanced in years, and such, in their own and midwife's opinion, feel the child move from the customary time to the usual time of delivery," &c.

"I had occasion," says Van Swieten, "to see this happen to a lady of distinction, the mother of fourteen children, who for eight years had ceased to conceive, and now firmly believed herself to be with child, having again felt all the uneasy symptoms which she had experienced so many times before; *nay, she was highly offended at all who dared to entertain the least doubt of it.* Her belly,

¹ "No woman," says Dr. Hamilton, "ever supposed herself pregnant who did not believe that she was sensible of the movement of the infant."—*Prac. Obs.*, pp. 106, 107.

² Swan's translation, 5th ed., p. 541.

gradually increasing for five months, went afterwards down, in the same gradual way, and she lived several years after in very good health; she was so much ashamed, however, of having been thus deceived, that, afraid of being laughed at by all her acquaintance, she kept the house for a whole year together."¹

The following remarkable case is very circumstantially related by M. Russel, of Vars. Mary Gibaud became, apparently, pregnant soon after marriage, having been previously healthy. She had suppression of the catamenia, morning sickness, enlargement of the abdomen; she felt, as she thought, the motions of the child, and, in short, every symptom of pregnancy was present. At the end of nine months, she fell into labor which lasted for thirty-six hours, when the attending midwife sought the assistance of a surgeon, who, finding the patient suffering from hemorrhage, *proceeded to deliver her*, but was astonished to find the uterus unimpregnated; the apparent labor returning violently, he bled her, with relief to her symptoms. After a month, the usual symptoms of pregnancy recurred, and again, at the end of nine months, labor apparently supervened, and she was again relieved by the natural and artificial loss of blood, as before. Thus she went on for upwards of twenty years, suffering all the inconveniences of pregnancy and labor every ten months, and having all the time her breasts full of milk.

She was seen by several professors from the different universities, and was, on one occasion, *tapped for supposed dropsy* at the hospital of Angoulême, but no fluid escaped. After death, from inflammation of the brain, she was examined, and every organ in the abdomen was found perfectly natural; but there was a quantity of fat in the omentum.²

One cannot read such accounts as this, and others like it, without assenting to the probable truth of the opinion of Harvey, when he says that, "although the woman conceiving after intercourse sometimes produces no foetus, yet we know that phenomena occur which clearly indicate that conception has really taken place, although without result."³ For my own part, I can-

¹ Commentaries, vol. xiii. sect. 1293. See also La Motte, obs. xx., xxi., and xxii.

² Gazette de Santé, 1824, No. 1. Med.-Chir. Review, Sept., 1824, p. 495.

³ Works, Syd. Soc. ed., p. 576.

not doubt that in many such cases conception does really take place, that the ovum perishes, but that certain of the sympathetic phenomena of pregnancy are continued.

A very curious, and, indeed, so far as I know, inexplicable phenomenon is frequently observed in these cases of spurious pregnancy, and under other circumstances also; I allude to the apparent presence of a defined abdominal tumor (see pp. 62, 193) when none such really exists; yet so exactly imitating reality, that it would be difficult to doubt our actual perception of it under the hand; but the proof of its non-entity is simple and unequivocally conclusive; for, if the patient can be made to forget that she is under examination, by completely diverting her attention, as by keeping her in conversation on some subject altogether unconnected with her own case or state, while, at the same time, the hand is kept pretty firmly pressed on the abdomen, the tension gradually relaxes, the size diminishes, and all sensation of a tumor is lost; and in some instances, I have found the same result obtained by causing the patient to turn and lie on her side, with the knees drawn up. Should these means fail of success, we have another in reserve, not likely to disappoint us; for if the woman be brought fully under the influence of chloroform, as suggested by Dr. Simpson, the distended abdomen almost at once flattens in a most surprising manner, and the supposed tumor is no longer to be felt while the anæsthetic influence is continued; but no sooner has this passed away and the patient is restored to consciousness, than the tumor returns, and is to be felt just as before. And here, I think, we have one of the happiest of the many valuable applications of chloroform, without which, in these cases, we might altogether fail in making a correct diagnosis as to the real state of the abdomen and its phantom tumor; the tension of the muscles being so sustained, whether involuntarily or by design, as to prevent the possibility of our so depressing them with the hand as to make a satisfactory examination; to which there is often opposed another very serious obstacle, only to be surmounted, at the moment, by the use of chloroform, and that is such an exquisite tenderness of the abdomen, that the woman shrinks from, and, in fact, cannot endure the slightest pressure of our hand. If we could find the woman in a state of deep sleep, it is highly probable that our

examination would be successful in detecting the real state of the case; but this is not easily accomplished, for this reason among others, that persons with the nervous system in the state of sensitive disturbance usually accompanying such conditions as we are now considering, are, almost invariably, very light sleepers, and awake at the slightest sound or touch.

Now in stating that the withdrawal of the patient's attention, or consciousness, allows us to arrive more easily at the truth, I wish distinctly to be understood not to imply that the production of the deception, or difficulty, is by the will or design of the patient—by no means; I have seen instances quite enough to convince me, that it is often entirely beyond her control; but certain it is, that the simulation of the tumor will continue as long as the woman's attention is concentrated on her own state, and on our examination (especially if she be kept lying on her back, looking at us), and will cease when her attention is directed elsewhere, or withdrawn altogether, by her being rendered unconscious.

While I was engaged in writing these observations, a report of a case occurring in St. Vincent's Hospital was published by Dr. O. Ferrall,¹ in which a young girl with great abdominal distension, and a tumor, which he considers to have been a displaced liver, was put fully under the influence of chloroform: when "the most remarkable change took place in the appearance of the abdomen; the recti muscles became relaxed, and sank backwards, until the surface of the abdomen became actually concave. As soon as consciousness returned, the tumor was found to possess every character as before described."

From what has been just now stated, as well as from facts related in other parts of this work, we have, I think, abundant reason to know that some at least of the phenomena, as for instance the swelling of the abdomen and the simulated or phantom tumor, which accompany these illusory states, are not confined to the married, or to those indulging in sexual intercourse, but are met with in the unmarried and perfectly chaste; mixed up with a variety of extraordinary and perplexing symptoms partaking largely of the characters of hysteria, and I believe, in many cases, having their origin in an unusual excitement of the

¹ Dub. Hosp. Gazette, No. 1, 1854, p. 3.

genital system; nor are they met with in females only, but have been observed in men also. Some very striking illustrations of this state have been often noticed in the lower animals also, two of which have been already adduced (p. 115) as occurring in bitches; in the one case, without intercourse with the male, and in the other, after intercourse but without conception; in the former instance, the animal being prevented from breeding, exhibited symptoms of uneasiness, and had a copious secretion of milk at the time that she would have brought forth, had she been allowed intercourse with the dog. And again, the fact so graphically noticed by Harvey:¹ "Overfed bitches which admit the dog without fecundation following, are nevertheless observed to be sluggish about the time they should have whelped, and to bark as they do when their time is at hand; also to steal away the whelps from another bitch, to tend and lick them, and also to fight fiercely for them. Others have milk, or colostrum, as it is called, in their teats, and are, moreover, *subject to the diseases of those which have actually whelped:*" and he adds, "the same thing is seen in hens, which cluck at certain times, although they have no eggs on which to sit. Some birds, also, as pigeons, if they have admitted the male, although they lay no eggs at all, or only barren ones, are found equally sedulous in building their nests." A very remarkable illustration, taking place in a heifer, was recently communicated to me by a friend, to whom she belonged.

I have seen many cases, also, in which a combination of symptoms nearly identical with those we have been considering, has been found accompanying diseased states of the uterus. In January, 1850, a lady whom I had attended in several of her confinements, came to town in great alarm as to her state; she was suffering from very aggravated symptoms of dyspepsia, such as she had been accustomed to when formerly pregnant: along with these, she complained of a host of nervous disturbances, great enlargement of the abdomen, with sensations of distinct and strong motions, as of a child: the abdomen, however, was soft and elastic throughout, and menstruation recurred every month, but still she was fully persuaded that she was far advanced in pregnancy: she had lumbar and dorsal pains, with

¹ Works, *jam cit.*, p. 576.

bearing down, and considerable leucorrhœa. On examination per vaginam, the uterus was found large and heavy, with its cervix increased in volume, and around the os were large patches of ulceration covered with exuberant florid granulations; in proportion as this affection was removed by treatment, all the symptoms gradually diminished, and at length disappeared; and three months afterwards, she was really pregnant, and was delivered of a fine healthy child in January, 1851, under my care.

She is now, February, 1854, in town again, similarly affected with symptoms of spurious pregnancy, but in a much slighter degree, and having also a trifling return of the uterine disease. A second case of a like kind is, at this moment, under my treatment, and it would be easy, but superfluous, to adduce several others.

The following case, the details of which are very remarkable, is related by M. Klein, court physician at Stuttgart; and is, I may observe, an example of a very curious fact not unfrequently observed in these strange cases, viz., that, where the woman had been the subject of some anomalous accident in her former confinements, she was similarly affected in the unreal or imitative labor: and we have already (p. 326), quoted a similar remark of Harvey's with reference to bitches, after passing through this state of spurious pregnancy, that they were subject to the diseases of those which have actually whelped.

Madame de B., aged forty-three, hysterical to the highest degree, having had thirteen labors, after an interval of five years considered herself again pregnant. The catamenia, which had always been very regular, became suppressed, and being, as she thought, in the second month of gestation, she fixed upon the 15th May as the day of her confinement, a precision in the way of calculation which she had manifested on several former occasions; her labors taking place on the very day predicted by her. It had always been found necessary to bleed her, several times, during her former pregnancies, on account of a tendency to convulsions, and the blood always presented highly inflammatory appearances; and now the same necessity for venesection existed, and the blood exhibited the same characters; she experienced the same antipathies and predilections with regard to certain articles of diet, as during her other pregnancies; she quickened at the

time expected, and the abdomen continued to increase in size; but she was uneasy because, from time to time, the menses appeared, though not as usual: she became, towards the end of her time, distressed with bearing down and tenesmus. On the 15th May pains began, and, following the usual course, soon became very severe, and *were accompanied with convulsions*, which had also happened in all her previous labors. Her accoucheur, Klein, now arrived, and having made a careful examination, declared she was not pregnant at all; an opinion which was fully confirmed by another physician, whom, under the circumstances, it was thought desirable to call in. The lady recovered perfectly, and remained in good health.¹

The late Dr. Labatt gave me the particulars of the following case which had come under his observation. A lady, who married rather late in life, and remained some years without conceiving, at length had the catamenia suppressed; from which, and other symptoms, she considered herself pregnant; she increased in size, and at the expected time pains came upon her, which were considered as those of labor; in consequence of which she sent for her medical attendant, who concurred in the opinion of her being parturient, and remained with her. At the end of forty-eight hours, as the pains continued severe, and she was not delivered, Dr. Labatt was called in to see her, in order to determine whether she ought not to be delivered with instruments, and what kind ought to be used; the attendant stating that he was unwilling to use the crotchet, because, having several times in the course of the night applied the stethoscope, *and heard the pulsations of the foetal heart*, he was assured of the child's continued vitality. Dr. Labatt, having examined carefully, suggested that there was no necessity for the use of any instrument, as the lady was not in labor, and for the best of all possible reasons, because she was not pregnant; which was the fact.

Dr. Reid² relates an amusing anecdote of one of the midwives who gave evidence in the celebrated Gardner Peerage case; she was the mother of seven children, and deposed, that she was in-

¹ Journal der Practischen Heilkunde; herausgegeben von Hufeland und Harles, 1815, Band. ii. St. 3.

² Lancet, 1850, vol. ii. p. 78.

variably right in her calculations about herself; that she always fainted away at the time of quickening, &c., so that she could not be deceived. She subsequently consulted Dr. Reid, stating herself to be seven months pregnant; the fainting had occurred as usual, the movements of the child were strong, and she had, in fact, all her established indications; on examination, she proved not to be pregnant at all.

Such cases as those hitherto related, however they may surprise us by the amount of ignorance displayed, or amuse by their absurdity, fade into utter insignificance, when contrasted with those deplorable instances in which the Cæsarean operation was contemplated; or, still more shocking, in which gastrotomy was actually performed, without any just cause for its adoption.

Desormeaux tells us he was called on to decide whether the Cæsarean operation should be performed on a woman who was supposed to have been several days in labor; she was not pregnant, but had a scirrhus ovary, and was laboring under a violent attack of peritonitis.¹

Dr. Bright² has recorded a case of hysterical distension of the bowels mistaken for ovarian tumor, for the removal of which the abdomen was opened; but no tumor could be found; the abdomen was closed, and the woman fortunately recovered. A similar case, seen by Dr. Gooch, has been already noticed, p. 139.

In the extraordinary case recorded by Dr. Keiller,³ the patient, a young woman of about twenty years of age, with a preternaturally protuberant abdomen, was not only pronounced pregnant, but in due time declared to be in labor, and her case considered one of such extreme difficulty and danger, that, after it had been *going on for a fortnight*, her medical attendant came to the determination of relieving the patient and himself, *by performing the Cæsarean section*, or, as he expressed it, "*cutting the child out of her side*," as he found "the bones of the pelvis so grown together, that the child could never be born in the natural way, dead or alive."

Under these circumstances, and fortunately before any opera-

¹ Dict. de Méd., tom. x. p. 447.

² Guy's Hosp. Rep., vol. iii. p. 257.

³ Edinb. Med. Surg. Journ., January, 1855, p. 19, *et seq.*

tive proceeding was undertaken, Dr. Keiller was called to see the patient, and at once pronounced against the existence of pregnancy; which opinion was very decidedly discredited by both the young woman herself and her friends, who one and all declared that the movements of the child had been distinctly felt by the hand, and even seen, on looking at the greatly distended abdomen. She was not pregnant, but a few years afterwards, she did really prove so, gave birth to a child, and afterwards began again to exhibit some of the symptoms which had formerly characterized her case; which now became invested with a new interest, from affording to Dr. Simpson the first opportunity of observing the singular power of chloroform in the diagnosis of abdominal enlargement in cases of spurious pregnancy.

The facts of Mr. Lizars' case are really so extraordinary, indeed we might say marvellous, that they would be scarcely credible had they not been witnessed by so many whose testimony removes all doubt.

The subject of it, when first seen by Mr. Lizars, in 1821, was a young woman only twenty-seven years of age, who had borne one child, and had now her abdomen as large as if in the ninth month of gestation, its whole cavity being apparently *occupied with a tumor*; in consequence of which, and as she was separated from her husband, she lost character, was dismissed by her employers, and also from a hospital, as being with child; an opinion which was also agreed in, by a number of respectable practitioners whom she consulted. She came to Edinburgh, where she consulted the chief medical men of that city, many of whom pronounced her pregnant, and all dissuaded her from an operation; two put her under the influence of mercury; all agreed that there was disease of one, or both ovaries, and she had been twice tapped for dropsy of the left ovary, after a formal consultation, which disease, as the event proved, did not exist.

In October, 1823, when she had been eight years a sufferer, gastrotomy was performed; the abdomen was opened, from about two inches below the ensiform cartilage to the crista of the os pubis. "I now," says Mr. Lizars, "proceeded to examine the state of the tumor, when, to my astonishment, I could find none." There was indeed an insignificant flattened tumor at the left

sacro-iliac symphysis. "Having," he continues, "satisfied all present, that this was not the tumor which was anticipated, that it was impracticable to extirpate it, *and that the uterus and ovaria were perfectly sound and healthy*, I proceeded to return the intestines," &c. &c. "I shall never forget the countenances of my pupils, and the younger members of the profession, when the intestines protruded, and baffled all the efforts of Dr. Campbell and the other gentlemen to confine them."

Suffice it to say, that fortunately she recovered, was able to leave her bed fourteen days after the operation, and in a few days more went to the country. Mr. Lizars ascribes the extraordinary deception in this case to protrusion forwards of the spine at the lumbar vertebræ, with great obesity and distension of the intestines. "This," he says, "did not appear at all conspicuous before operating, otherwise it should, and must have struck some of the medical gentlemen who examined her; nor did it occur to myself, during the operation, nor until some time after, when I could find no just cause for being so singularly deceived."¹

This case occurred many years before Dr. Simpson's great discovery of chloroform; had it been then known, and used, such a mistake could hardly have been made, as, under its influence, the phantom tumor would have disappeared.

But even this case of Mr. Lizars' is quite thrown into the shade by the Berlin case, already alluded to (p. 66), in which the operation was undertaken at the earnest solicitation of Heim, who was considered the Magnus Apollo on all questions of extra-uterine gestation; and so remarkable is the whole history of the proceedings, that I trust I shall require no apology for transcribing in full, Heim's own account of the affair, as given in his miscellaneous medical works.²

At p. 365, he says: "I shall hereafter, in the course of my essay (on extra-uterine pregnancy), relate the history of a case of abdominal pregnancy, in which I had the operation performed without success; but I entreat my readers, if they wish to pass a fair and correct opinion on the treatment of that case, to read

¹ Observations on the Extraction of diseased Ovaria, by John Lizars, Edinb., 1825, p. 6, *et seq.*

² Dr. Ernst Ludwig Heim's Vermischte Medicinische Schriften, Leipzig, 1836.

my communication attentively through, from beginning to end." And at p. 402, he thus relates the case:—

"The fourteenth case relates to the patient mentioned in the introduction to these communications, in whose abdomen, opened at my desire by the able hand of Professor Dieffenbach, on the 5th of August, 1828, in the presence of the Chief Medical Privy Councillor, Dr. Rust, now President, and the Medical Privy Councillor, Dr. Kluge, as well as of Dr. Hauck, Professor of Midwifery and Aulic Councillor, and many young physicians—to the amazement of all present, though I myself was not entirely surprised at the result, no child was found.

"The woman was twenty-one years of age, a year and a half married, and had something masculine predominating in her conduct and *tout ensemble*. She had never in her life been ill, and had always been exceedingly active and laborious. As the catamenia, which she had always had at the right time, ceased, and pains set in in the breasts and under the shoulders, she thought, as did those about her, that she was pregnant. An unlucky fall on her hip, which she met with in the fifth month after the cessation of the menses, brought on a complete prolapse of the uterus, with some uterine hemorrhage. I saw her first about six weeks before the expiration of her reckoning. The strongly retracted umbilicus; the intermittent, violent, and peculiar pains in the abdomen, which obliged her often to lie for several consecutive hours; but above all, the enlargement of the cavity of the uterus to three or four times its natural size, and the prolapsus, which, if not dependent on this, was not easily to be explained in so healthy a woman, together with the phenomena I have already described, did not leave me long in doubt, that pregnancy, extra-uterine, and moreover situated in the abdominal cavity, must have taken place. There had been no former delivery, no leucorrhœa or other uterine affection to cause or keep up a relaxation of this organ. There was nothing but the enlargement of the cavity of the womb, and its increase in weight, to predispose to so easy an occurrence of prolapse; and this, therefore, appeared to me to be in itself a sign nearly sufficient to lead to the suspicion of abdominal pregnancy. Besides, the woman assured me that her abdomen, which was naturally

fat, had latterly become larger; I myself found it not prominently arched, but more extended in breadth. She had never felt the motion of the child, nor could her husband or I discover any such. Neither could she tell me whether she had, at the beginning, or at any period of her supposed pregnancy, felt an internal rigor, from which I might have inferred the death of the child.

"After I had frankly, and in a kind manner, expressed to her my opinion on her real condition, and had represented to her, that to save her from much suffering and misery, I should be obliged to have an operation performed on her, far from showing a willingness to submit, she, strange to say, declared that she was quite opposed to it. But when I promised her that if she would submit herself entirely to my treatment, I would remove her from her miserable cellar into two good furnished apartments, where she would neither want for care, nor for any kind of requisite; and when I further told her that I would not only bear all expense thus incurred, but that I would subsequently make her a handsome present, she appeared to become more yielding, at least she showed no objection to listen to what I said.

"In the frequent visits I afterwards paid her, she invariably answered in the negative to the questions I repeatedly put to her, as to whether she had felt either rigor, or the motions of the child. Nor, as I have said, could I perceive any, even when examining with a cold hand. If I do not very much mistake, she at length began to wish that the operation should not be delayed; for all at once, she assured me that she felt the motions of the child every day, and her husband also asserted that he had once plainly perceived them. Probably one of the physicians who visited her may accidentally have said, that if she once felt the motion of the child, the operation might be proceeded with. In a word, little as I felt inclined to believe her, she now persevered in this assertion; and although this phenomenon occurs but rarely, so that I might almost, by it alone, have been induced in this case to abstain from the operation, yet I thought of the above quoted communication of H. Meyer, who stated that he had in his case plainly felt the motion of the child, and I reflected that such a position of the child might be possible, though indeed

only exceptionally, as would admit of its being able by its motion to make its existence known to the mother. But further, in addition to this newly added sign, the unfortunate cases I had myself experienced occurred to my mind, in one of which a woman three months, in another the patient a full year after the death of the foetus, succumbed to so fearful a death; while in another case, the patient had for ten years constantly led, under my eye, an indescribably miserable life, so that I must have charged my conscience with it, had I allowed this woman to experience so wretched a fate. But finally I considered, in addition to thinking that perhaps a living mature child would not be found, that the Cæsarean operation was not so absolutely dangerous, because I had often seen it performed with a fortunate result, and indeed on another occasion, but a short time previously, had witnessed its performance by Privy Councillor Dr. Rust on a stranger, who was anxious, by all means, even at the risk of her life, to be relieved of a great tumor in the abdomen; and although, when the abdomen was opened, this could not be removed, on account of its intimate adhesion, she soon left Berlin with a well healed wound, and a remarkable alleviation of her former sufferings.

"Accordingly, when the time calculated on for delivery was past, and the woman had spent some days suffering from the periodical recurrence of violent pains, the Cæsarean operation, already long determined on, and wished for, was, with the able assistance of Privy Councillor Dr. Rust, skilfully performed by the above-named operator, who placed full confidence in my maturer judgment, as to the case in question; and the abdomen when opened was strictly examined by Drs. Hauck and Kluge, but in vain. I also introduced the entire of my right arm into the abdominal cavity, but found nothing from which I could have inferred the existence of a foetus. But had I as much ability and practice in such investigations as I, unfortunately, have little, I would not have been inclined to rest the decision of the question on the results of such a manual examination; for, as it is now evident that the embryo must naturally have died early, it would doubtless, even if this had been taken into consideration in the investigation, have been, even for the practised obstetri-

cian, one of the most difficult problems to discover, accurately feel, and correctly recognize, in so great a space as the cavity of the abdomen, the membrane of a fœtus of a few months.

"The opening was closed by Dieffenbach and myself, and we both continued to attend the patient. To my great joy, all went on so well, that, at the end of three weeks, the abdominal wound was completely healed, the patient could walk about her room, had an excellent appetite, slept well, and had regained her former cheerfulness; and finally, after remaining four weeks in her lodgings, having become much thinner, but comfortable, and free from all pain, she was able to return to her cellar, where, in spite of all warning, she continued to work as hard as before.

"As to the treatment I will only observe, in passing, that on account of the violent inflammation, we abstracted during the course of her illness upwards of sixty ounces of blood, in four venesections, besides applying 200 leeches to the abdomen, and keeping on ice-cold applications day and night. Professor Dieffenbach visited the patient twice a day; the present Professor Hohl, of Halle, who at that time was living in the same house with her, drew off the urine, which was very frequently retained; and Dr. Paetsch noted her case from beginning to end; for which, I now publicly and thankfully repeat the expression of my obligations to those three gentlemen."

Schmitt, not satisfied with having well and faithfully described the condition of spurious or pseudo-pregnancy, has proposed in explanation of it, a theory which is so happy a specimen of rendering a thing, originally obscure, still more so by an explanation, that I shall subjoin it, as a warning to those who may feel disposed to offer physical explanations of things inscrutable by finite faculties. After stating that he is disposed to attribute this condition to the effect of an excited imagination, his words are:¹ "It is as if impregnation proceeded from the brain, a matter which can only be comprehended, and that but obscurely,

¹ "Es ist als wenn die Befruchtung vom Gehirne ausgehe, welches nur durch die (bekannter Massen) bestehende, enge polarische Verbindung des Cerebral- und Sexual-systems mit einem Versinken des Gehirns in die Tiefe des Gangliensystems und einem die Schranken des Individuellen durch zubrechen strebenden, magnetischen Hervortreten dieses Letzteren dunkel begriffen werden kann."—*Sammlung Zweifelhafter Schwangerschaftsfälle*, &c., p. 25.

from the intimate polar connection (sympathy) known to exist between the cerebral and sexual system, together with a degradation (or depression) of the cerebral into the depths of the ganglionic system; together with a magnetic effort on the part of the latter, to break through the limits of individuality (or those allotted to it)."

I trust I may be excused if I say that the only case of pregnancy I know of, to which this theory might be supposed applicable, is that of Jupiter, when he brought forth Minerva from his head; when Vulcan acted as accoucheur, and facilitated the delivery, by cleaving Jove's head with a hatchet.

It is, however, right to observe, that long before Schmitt, some equally mysterious observations were made by Harvey¹; in which he institutes a comparison, or indeed maintains an identity, between conception in the brain, and conception in the uterus. "Since the substance of the uterus, when ready to conceive, is very like the structure of the brain, why should we not suppose, that the function of both is similar; and that there is excited by coitus, within the uterus, a something identical with, or at least analogous to, an 'imagination' (phantasma) or 'a desire' (appetitus) in the brain, whence comes the generation, or procreation of the ovum." And again, p. 585: "The 'conception,' therefore, of the uterus, or the ovum, resembles, at least in some sort, the conception of the brain itself, and in a similar way does the 'end' inhere in both." And after alluding to several facts, in the way of illustration, or proof, he concludes thus: "Whosoever, I say, ponders these things, will not, I think, regard it as absurd or monstrous, that a woman should be impregnated by the conception of a general immaterial 'idea,' and become the artificer of generation" (p. 579). If we are satisfied with such explanations as these, perhaps it would be well to change the designation of this condition, and call it cerebral-pseudo-pregnancy.

Whatever opinions we may form as to the cause of the condition we have been describing, one thing is certain, that when called on to investigate cases of the kind, the greatest circumspection and caution are required in giving any decided opinion on the state of the patient, as well as in the treatment we pre-

¹ Works, *jam cit.*, p. 577.

scribe; in reference to which two points it may be suggested, 1st, that in such cases, the greater number of the rational signs must be held as entitled to little or no consideration, if not altogether disregarded; and our reliance should be placed on careful manual examination, by which the abdomen, however enlarged, is found soft, puffy, and compressible, the umbilicus sunk, no abdominal tumor, and the uterus, examined per vaginam, unaltered; for although, as formerly stated (p. 319), the organ does occasionally under these circumstances enlarge somewhat, the increase of size, and condition otherwise, are not such as would be likely to lead us astray in forming our opinion: 2dly, whenever the circumstances are such as, while they apparently favor strongly the notion of pregnancy in the apprehension of the woman herself, or of others, leave room for doubt in our mind as to the fact, its existence, though doubted, should not be too positively denied; and the woman should be treated for a time as if she were pregnant, and such remedies ordered as would be compatible with that state, and at the same time calculated to improve the state of the system generally; an object which we shall in the great majority of instances, best accomplish by a suitable course of aperients, conjoined with tonics, and the use of the tepid, or cold bath.

The necessity for such caution will appear from the following case: Several years ago, after seeing within a short time some cases of spurious pregnancy, I was consulted by a lady whom I knew to be past forty, and whose youngest child was then between seven and eight years old. She stated that the catamenia, which had been for some time gradually diminishing, had disappeared altogether for the preceding three months, that in every other respect her health was as good as usual, but that some of her friends had been joking her about being in the family-way: this idea I discouraged as improbable, and suggested as delicately as I could, that her age would account sufficiently for the circumstance which had attracted her attention, and I ordered merely some gentle aperients which she required. Two months afterwards she sent for me, and to my surprise and consternation, informed me that she had quickened and would require my attendance at such a time; adding, that she hoped I was now satisfied, that she was not quite too old to add to her family. It

was all true; in due time, she gave birth to a son, whom she frequently afterwards presented to me, with some playful observation calculated to recall my former error to my recollection.¹

CHAPTER XIII.

INVESTIGATION AFTER DEATH.—EXAMINATION OF THE UTERUS AND ITS APPENDAGES.—THE OVARIES, CORPORA LUTEA, FALLOPIAN TUBES.

It is unnecessary to repeat here, what has been already particularly set forth, with regard to the state of enlargement in which the uterus must be, when containing the product of conception. In relation to our present subject, the first and most obvious fact to be noticed is that, when an examination is made after death, and the uterus found of its ordinary diminutive size, it is proof positive against the present existence of natural pregnancy. If, on the other hand, we find the organ enlarged, and its condition apparently corresponding to the period of pregnancy supposed to exist, nothing but a careful examination of its contents, or other cause of enlargement, can determine the question at issue. I will here only observe, that nothing less than the distinct and unequivocal detection within it of the ovum, or of some of its component structures, ought to satisfy our minds, or justify us in giving an opinion in the affirmative.²

We must here remember that we may meet with such cases as those already related, p. 286, *et seq.*, or those still more remarkable ones referred to at p. 301, which show us that it is quite

¹ On this important subject of Spurious Pregnancy, and for cases illustrative of it, see Ramsbotham, Practical Observations, part ii. p. 387. Gooch on Diseases of Females, p. 225.* Perfect's Cases in Midwifery, vol. i. p. *293. Alexander Hamilton on Female Complaints, p. 125. Blundell, Principles of Obstetrics, p. 160. Schmitt, 7th, 8th, 13th, and 19th cases, 1st division; and Critical Introduction, p. 44. Gardien, Traité des Accouchemens, tom. i. p. 542. La Motte, ch. viii. de la Fausse Grossesse, p. 47. Fothergill's Works by Elliot, 1781, p. 464. Mauriceau, obs. 275 and 566.

² See Observations on the Examination of the early Ovum, p. 251.

possible for a woman to have a child in the abdomen without being pregnant, in the ordinary meaning of that condition; but this consideration may have no small influence and importance in preventing undeserved deterioration of character; because, let us suppose a woman so circumstanced to become a widow, and so remain for a year or two; and then dying, an examination is made by some one not familiar with such exceptional cases, and a child is found in her abdomen, would not a conclusion be but too probably adopted which would cast an unmerited stain on her memory?

Another condition which may present itself is that in which the uterus is found enlarged but empty, exhibiting, however, several of the changes which accompany gestation; but these, upon examination, only afford evidence sufficient to convince us that the organ has recently contained something which had been attached to its internal surface by a vascular connection; the substance expelled may, or may not, have been the product of conception; and the most careful examination of the appearances remaining, or of the structural changes effected, may not enable us to pronounce safely on the precise nature of the cause which had produced them. Thus, for instance, in a case where hydatids have been expelled, we could not determine, by examination of the uterus alone, especially at early periods, whether the conditions there observable were the result of true pregnancy, and the expulsion of a foetus or ovum; or whether they might not have been produced by some other cause, unconnected with conception; we may not, in fact, be able to tell, without further investigation, whether the woman have recently conceived or not, a question which it may be, occasionally, of paramount importance to be able to answer; we must, therefore, turn our attention in another direction, and seek for proof of impregnation in the appendages, particularly in that part of them which is more especially the seat of conception.

This leads us at once to investigate the value of that peculiar change in the ovary, by which, after fruitful intercourse, there is produced a new structure, to which has been applied the name of *corpus glandulosum*, or more generally, *corpus luteum*, the presence of which is, by some, considered incontrovertible evidence of impregnation. Others, however, with equal confidence, discredit

its value, asserting that its existence may be owing to causes altogether accidental, and independent of sexual intercourse, and that, consequently, it cannot be taken as evidence of conception. It becomes, therefore, a matter of great moment, to examine the truth of such assertions, and to determine, if we can, how far they coincide with, or depart from, absolute matter of fact, which alone can be the measure of their correctness, and consequently of their value. In order to do this, the first thing which appears essentially necessary is that we should have a clear idea of what a true and perfect corpus luteum is, and also of what is not such a corpus luteum.

If this inquiry should appear to any one to be, at the present day, superfluous, it certainly was not so when I first undertook to give a full account of the matter; when it was only necessary to compare the descriptions and delineations to be found in the generality of books, in which the corpus luteum was spoken of, with the object itself, as it exists in nature, to be convinced how faint was the resemblance between the portrait and the original.¹ I think that the naming of this substance gave rise to much of the error which existed and was propagated on the subject; the color being assumed as the only characteristic necessary to constitute the corpus luteum. Whenever, therefore, small spots, or even points, of a yellow hue were met with in the ovaries, they were supposed to be true corpora lutea. I recollect distinctly the first time my attention was drawn to the subject was at a demonstration of the structure of the ovaries by a distinguished anatomist; when two spots, each not larger than a grain of mustard-seed, and of a yellow color, were exhibited as specimens of corpora lutea, and as proving that the woman had borne two children; and even now there still exists great discrepancy of opinion as to the distinctive characters of the corpus luteum which attends upon conception, and of those which are produced independently thereof, and consequently as to the absolute value of this new structure as a proof of pregnancy.

¹ Mason Good, for instance, says: "As soon as the ovulum has thus escaped, the lips of the wound hereby made in the side of the ovary are closed by an external cicatrix, and indented with a small cavity, which forms what is meant by a corpus luteum."—*Study of Medicine*, vol. v. p. 22, 3d ed., 1829. See also Veolsk's *Tabulæ ad illustrandam Embryogenesisin*, &c., 1854, tab. 1, fig. 8.

A trial took place, some years ago, in Edinburgh, which, while it evinced the necessity for a correct knowledge of this subject which might occasionally arise, even under circumstances not apparently connected with its existence, proved, but too plainly, how little was known about it. A prosecution was instituted against four medical students, for exhuming the body of a lady in Glasgow. The body was so disfigured that it could not be identified; the ovaries were, however, examined, and it was reported that there was, in one of them, a perfect corpus luteum, which would be sufficient to prove that the remains were not those of the lady in question, who was a virgin, and advanced in life. On the trial there was a complete contradiction between the medical witnesses, some of whom affirmed the appearance in the ovary to be a true corpus luteum, while the others maintained that it was not; so that no satisfactory inference could be drawn from the fact. The body was afterwards identified by a dentist, who produced a cast which he had taken of the gums.

When Mr. Angus was tried in Liverpool, in 1808, for the supposed murder of Miss Burns, great doubt arose as to whether the condition of the uterus or its appendages was such as to prove a pregnancy recently existing. "It was not until after the trial, that the ovaria were examined. They were then divided in the presence of a number of physicians, and a corpus luteum distinctly discovered in one of them. Mr. Hay took the uterus and its appendages to London, and showed it to the most eminent practitioners there. He received certificates from Drs. Denman and Haighton, Messrs. Henry Cline, Charles M. Clarke, Astley Cooper, and Abernethy, all stating that it exhibited appearances that could alone be explained on the idea of an advanced state of pregnancy. *And it appears to have been universally allowed, that the discovery of the corpus luteum proved the fact, beyond a doubt.*"¹

In order to understand this matter satisfactorily, it will be necessary to consider, briefly, the situation in which the ovum is placed in the ovary, its coverings, and some other circumstances connected with its expulsion thence.

The ovum is contained within the Graafian vesicle, which consists of two distinct membranous envelops; and besides these

¹ See Report of the Trial; and Edinb. Med. and Surg. Journal, vol. v. p. 220.

two coats of the Graafian vesicle, there are two others, through which the ovum has to pass, when leaving the ovary, namely, the tunica albuginea, or proper coat of the ovary itself, and its peritoneal covering.

Many, at the present day, contend that the ovum is first protruded from the ovary, under the stimulus of the menstrual nixus, and only then; and that afterwards encountering the fecundating fluid and spermatozoa of the male, in the Fallopian tube, or cavity of the uterus, it becomes impregnated, or vivified. I altogether dissent from this doctrine, or theory, as expressing the exclusive mode of impregnation: if such account were accurately and unrestrictedly true, no woman could conceive, except an ovum had previously separated from the ovary; and it is not pretended that this happens, independently of conception, except at, or just after, the menstrual periods; and if so, no woman could conceive at any other time; whereas there are well-attested facts in abundance, to prove that women conceive at all stages of the interval; and sometimes just before, as well as after, the catamenial flow, as is satisfactorily shown in many cases, by the time at which labor takes place;¹ thus in a case which I have already related (p. 129), the lady menstruated for the last time, on the 18th October, slept with her husband only on the 10th November, on which occasion she conceived, and was delivered on the 17th August; and in the well-known and remarkable case recorded by Dr. Dewees,² the lady and her husband met but on the one occasion, a week before menstruation was expected, and on that occasion she conceived, as the event proved, but menstruated at the expected time. And still more cogent are those cases in which women have conceived before the function of menstruation was established, or while nursing, or in other conditions of long-existing suppression, of which ample evidence has been already supplied in Chap. III.

A reference to Dr. Reid's very accurately reported cases³ of conception following a single coitus, will show unequivocally that impregnation must have taken place twelve or fourteen days

¹ Hamilton, *Pract. Obs.*, p. 104.

² *Compendium of Midwifery*, p. 165.

³ See *Lancet*, 1850, vol. ii. p. 78, and 1853, vol. ii. p. 206.

after menstruation; and, moreover, Dr. Ritchie has, I think, shown satisfactorily, by dissections of females made at all periods of life, that Graafian vesicles are ruptured; and ovules extruded, even in children, and in women during the child-bearing period of life, at times apart from the menstrual period.

It may be, and probably is, quite true, that the semen of the male does not reach and act upon the ovum while yet contained within the ovary by actual physical contact; but it does appear to me equally probable, that in the accomplishment of the mysterious operation of impregnation and conception, the vivifying influence of the male semen may be conveyed to, and modify the action of every part of the uterine system, and be *potentially felt* by the ovum, or "the first dim speck of entity" within the ovary; for, to use the words of Harvey, "the virtue which proceeds from the male in coitu has such prodigious power of fecundation, that the whole woman, both in mind and body, undergoes a change." It is much to be regretted, that there should be in so many minds such a tendency to explain vital processes or functions, by explanations based on mere physical or mechanical agencies, and in fact, to be satisfied with no other; whereas, all such modes of explanation are invariably found inadequate and unsatisfactory.

It has been objected, and indeed, it is one of Pouchet's principal arguments, that the natural course of the peristaltic action of the Fallopian tube is from within outwards; and that, therefore, it cannot carry the semen from the uterus to the ovary.¹ Now, I think it would be equally just to say, that as the natural peristaltic action of the uterus and vagina is from within outwards, the semen deposited in the latter canal, or, *à fortiori*, only at its entrance, could not be thence transferred inwards to the orifices of the Fallopian tubes. Is not the natural action of the œsophagus to pass the food down to the stomach? but we know, that in a large class of animals, it equally, and as perfectly transfers it back again into the mouth, for rumination. I know no reason why the Fallopian tube should not be equally capable of transmitting semen to the surface of the ovary, as of transferring an ovum to the uterus; and that it does so, or, at least, that impregnation begins in the ovary, appears to me indisputably proved, by the

¹ *Théorie positive de l'Ovulation Spontanée, &c.*, p. 76.

fact of ovarian pregnancy; one well-marked instance of which occurred under my own observation, and I have preserved the parts:¹ or perhaps even more strongly still, by cases of the ventral kind; an opinion which, I may observe, is entertained by several distinguished physiologists, to whom reference will be made presently. Pouchet meets this unanswerable objection by saying that, in extra-uterine pregnancy "there is an aberration in the dispersion of the semen, which does not follow its natural course." (*Op. jam cit.*, p. 75.)

Again, it has been objected, that the ovum being confined within several membranous envelops, how could the semen effect an entrance through these? In reply to this objection, I would say, first, there is no greater difficulty in such an occurrence, than would, *à priori*, appear to exist in the ovum making its way out of the ovary, and effecting a passage through so many walls as surround its prison; and yet we know certainly, that it does so, and even without the vital stimulus of impregnation: and secondly, I think, that it is in no way repugnant to a high degree of probability, to suppose, that in the orgasm which attends fruitful coition, when the fimbriated extremity of the Fallopian tube grasps and invests the ovary, the semen is carried to, and kept deposited on the surface of the latter organ; whence the finer parts of that fluid may pass inwards by endosmose or imbibition, through the already thinned membranous coverings, and communicate to the germ the first mysterious impulse of incipient life; in the meantime, the envelops become still thinner, and at length open, and the ovum is thus exposed to the full and direct contact of the semen, before its complete extrication from the ovary. "On opening the body," says Valentin, "of a female mammal, one or more days after it has received the male, semen may be found not only in the body and horns of the uterus, but also in the oviducts, and on the surface of the ovary. The spermatozoa are in vigorous movement," &c. &c.²

Müller, also, maintains that it is in the ovary that impregnation takes place; and considers as decisive the fact of ovarian and ventral pregnancy, and the presence of the semen on the ovary,

¹ See Dublin Med. Journ., vol. ii. p. 196.

² Text-Book of Physiology, p. 641.

which has been announced also by Bischoff,¹ Barry,² and Wagner.³

This point is very fully and impartially discussed in Baly and Kirkes' supplement; and, after stating that sufficient time often elapses for the seminal fluid to reach the ovary, before the extrusion of the ovum, it is added, "and doubtless in these latter cases fecundation of the ovum or ova is effected at the ovary itself" (p. 59).

I am fully, indeed I might say painfully, sensible of the difficulties that invest this question, surrounded as it is by the most profound obscurity and impenetrable mystery, and will, I presume, ever so remain; but, after the best consideration I could give it, the above is the conclusion arrived at in my mind, and supported as it is, also, by men of such authority as those just named, I think I may say that, at least, it is not incompatible with reasonable probability, or with facts more palpably observable in other classes of the animal and vegetable kingdoms.

This first communication of the new form of life to the germ within the ovary, I consider as conception; on the occurrence of which, if not before, there takes place a great determination of blood towards the ovaries, as well as to the whole of the uterine system; the coats of the Graafian vesicle from which the impregnated ovum is to be discharged, become pervaded with a close network of vessels; an increased secretion of fluid is poured into the cavity of the vesicle, which enlarges considerably in size, and is thus at once pressed *outwards* towards the surface, and against the peritoneal coat of the ovary; the close structure of the body of the ovary preventing the enlargement being accommodated *inwards*; at the same time, a soft, granular substance, of a yellowish-red or orange color, is poured out (for the formation of the corpus luteum) between the two coats of the vesicle, in considerable quantity all around; most abundantly, where the vesicle lies deepest in the ovary, and more sparingly towards the point where it is pressed towards the external surface of the ovary, and against the peritoneum; for at this point the coats of the

¹ Développement de l'Homme et des Mammifères. Paris, 1843, pp. 22, 56.

² Philos. Trans., 1839.

³ Traité de Physiologie. Bruxelles, 1841, p. 68.

vesicle are thinner, and apparently without vessels, exhibiting a semi-transparent spot¹ analogous to the white line, or *stigma*, which is observed on the external surface of the capsules containing the yolk in the ovarium of the bird, and along which the capsule opens when the vitellus is to be discharged into the infundibulum. Some have maintained, that the formation of the corpus luteum is altogether subsequent to the rupture of the Graafian vesicle, but I have no doubt that this opinion is erroneous, and that the truth is as announced by Baly and Kirkes, p. 51: "It is an important fact that the development of the *corpus luteum* commences before the rupture of the Graafian follicle." (See p. 351.) The consequence of the formation of this new substance, and its situation, together with the other changes just specified, must be, considerable compression from within outwards of the inner coat of the vesicle, within which is the ovum, and the fluid which always surrounds it; which fluid is thus pressed forcibly against the point where the thinned and unvascular portion of the vesicle is in contact with the peritoneum, which is thereby caused to project a little from the surface, so as to form a small² nipple; absorption at the same time proceeds, and thus, by the conjoined agencies of the *vis à tergo*, acting, as it must of necessity do, towards the weak point of the vesicle and its peritoneal covering, and the natural tendency of the surrounding parts of the firm structure of the ovary to close in, and restore themselves to their former condition, together with the effect of absorption, an opening is effected through the four coats surrounding the ovum, and its transfer from the ovary into the tube accomplished. Thus, the vesicle after impregnation may really be said to have become, with regard to the contained germ, a sort of little, temporary uterus, lined with a membrane, the fine granulations and villousities of whose internal surface give it much the character of a mucous tissue, covered externally by another membrane, and having interposed between them the fleshy struc-

¹ "Thee ea pars, quæ post hæc rumpitur, jam aliquod tempus ante rupturam tenuior videtur," &c.—*Baer*, p. 15. "Macula illa, in quacumque vesicula diversam formam gerens, oriri inde videtur, quod stratum internum opacum, subito in hac regione tenue fiat."—*Ibid.*, 16.

² "Cum aliquali prominentiâ, quam, præ similitudine, non inepte papillam nominaverimus."—*De Graaf*, 246. See *Baer's* plate, fig. xiv.

ture of the corpus luteum; through which bloodvessels ramify and exhale through the lining membrane a serous fluid for the support of the early ovum, which as yet lives by imbibition. From this temporary uterus it is expelled in consequence of the increasing distension, by the pressure of the surrounding structure and corpus luteum;¹ its envelops bursting and letting it pass through, to be received by the Fallopian tube, and transmitted to the cavity of the true uterus; there to be at first again supported through the medium of an organized decidual product formed around it, and afterwards by other means matured; until it is again expelled thence, by another process consisting also of pressure from the surrounding parietes, and an increased distension of the membranous envelops, which, at length giving way, the child is protruded into life.

The following passage from Pouchet accords remarkably with this view of mine, published so long before: 'Durant le phénomène de l'ovulation, l'œuf est expulsé de la capsule de De Graaf par un mécanisme absolument analogue à celui qui détache et expulse de l'utérus le placenta; c'est aussi un épanchement de sang à l'intérieur de la vesicule qui enlève cet œuf et la membrane granuleuse dont il est environné, en les portant l'un et l'autre vers l'extérieur: et à l'exhalation de ce fluide se joignent les contractions de l'organe.' (*Op. jam cit.*, p 137.)

It will appear very obviously, from the above description, that I believe the corpus luteum to be surrounded externally, by the outer membrane of the Graafian vesicle;² while its cavity is lined by the inner membrane of this vesicle; the corpus luteum being in fact inclosed between these two membranes, and its substance pervaded by the small vessels passing from the outer of the two coats.

That this is the situation of the corpus luteum, I feel so per-

¹ "This observation," says Dr. Allen Thomson, "also makes it probable that the growth of the corpus luteum may contribute to cause the rupture of the vesicle."—*Cyclop. of Anat. and Physiol.*, vol. ii. p. 450. Dr. Meigs, also, adopts in very decided terms, the same view of the means by which the expulsion of the ovum is effected; as will be seen in a passage which I shall presently have occasion to quote from him, for another purpose. (See p. 351.)

² Hence, as Rœderer remarks, "ab ovario, cum quo cellulosa ope cohæret, separari sine læsione potest."—*Icones*, plate vii. fig. viii. p. 44. "Propria membrana vestitur."—p. 45.

fectly satisfied, that I would not have thought it necessary to dwell on the point at any length, but that a different account of the matter has been given on the high authority of Baer, and other distinguished observers.

Baer thinks, that the corpus luteum is not a new body, but merely the inner coat of the Graafian vesicle in a state of greater development,¹ and so represents it in his plate, fig. xiv.: but it must be remembered that at the time Baer made his great discovery, and published his celebrated epistle, little or nothing was known of the periodical rupture of ovarian vesicles, or the formation of that kind of corpus luteum which we now name false, or spurious, and in which the yellow matter is so constantly observed to be deposited on the inner surface of the Graafian vesicle; and such a product, I feel persuaded Baer described, when he declared the corpus luteum to be the inner membrane of the vesicle in a state of efflorescence or hypertrophy; and I am the more convinced of this, from examining Baer's own figure xiv., which he tells us is magnified ten times; and, so magnified, the yellow wall of the corpus luteum is only three lines in thickness, that is, it was in nature, less than one-third of a line thick; whereas the wall of the true corpus luteum of the bitch, which it is supposed to represent, generally measures about a line in thickness.

I find that Mr. Wharton Jones, in his elaborate report on the ovum of man, &c.,² gives an opinion (p. 528) strikingly in coincidence with the view above expressed. "In regard," says he, "to the human corpora lutea described by Baer, in several cases, the author of this report has verified the correctness of Baer's description; but in all, there was no doubt, from the history, that the corpora lutea had been developed independently of impregnation."

I have no hesitation whatever in declaring my conviction, as of a fact, ascertained from multiplied examinations carried on through more than twenty years, that this statement of Baer's is incorrect, as regards the corpus luteum of pregnancy; and that

¹ *Minime corpus novum est, sed stratum internum thecæ magis evolutum.*—*De Ovi Mammalium et Hominis Genesi*, 1827, p. 20.

² *British and Foreign Med. Rev.*, 1843, vol. xvi.

the inner coat of the Graafian vesicle is to be found as a distinct structure inside of the substance of that body; which, moreover, I am prepared to demonstrate in several specimens in my museum; and the relation of the outer coat of the vesicle has been accurately ascertained and described by others, whose authority will hardly be questioned, and whose accounts I proceed to subjoin.

Dr. Allen Thomson says:¹ "The corpus luteum may, by dissection, be easily separated from the surrounding parts, and turned out of the ovary; and when this is done, the external membrane of the original vesicle remains lining the cavity left in the ovary." To the same effect is Kolliker's description: "Exteriorly, these bodies are bounded towards the *stroma* of the ovary by a thin, whitish, fibrous membrane." "The outer fibrous membrane is the external layer of the original fibrous coat of the follicle."² The same thing has been most satisfactorily demonstrated by Dr. Paterson, of Leith, in a very valuable paper on the corpus luteum.³

Dr. R. Lee, in 1839, announced as his opinion, that the corpus luteum "is formed around the outer surfaces of both coats of the Graafian vesicle, and that the stroma of the ovary is in immediate contact with the external surface of the yellow matter."⁴ In this view, I believe Dr. Lee stands alone, or nearly so, and it seems that he was much influenced in coming to this conclusion, by finding that the dense white membrane which he found lining the cavity of the corpus luteum could be separated into two distinct layers, which he concluded were the two coats of the Graafian vesicle.

But, I believe, it will be found that this splitting of the inner coat of the Graafian vesicle can be accomplished in any case where it has been so condensed and thickened as it was in Dr. Lee's, and as I have often seen it; thus Kolliker says expressly, that "the inner layer also may be again divided."⁵ Again, in a series of experiments on bitches, carried on conjointly by Dr. Allen

¹ Todd's Cyclop. of Anat. and Physiol., vol. ii. p. 450.

² Human Histology, vol. ii. p. 251, and Fig. 266.

³ Edinb. Med. and Surg. Journ., vol. liii. p. 55.

⁴ Med.-Chir. Trans., 1839, vol. xxii.

⁵ Op. jam cit., vol. ii. p. 248.

Thomson and Dr. Paterson,¹ the formation of the corpus luteum between the inner and outer membranes of the Graafian vesicle was observed, from its commencement up to the twenty-first day after conception; they found that the internal coat gradually became thicker and whiter, which change was caused by an effusion of lymph upon its internal surface; and this lymph layer, when firm, could, with care, be separated into several layers. Again, it has been occasionally observed, without any artificial manipulation, that there was visible a tertiary membrane in the same situation; of this I have in my museum a very good specimen, in a corpus luteum of two months, the cavity of which it partially lines, having all the appearance of a layer of coagulable lymph; and Dr. F. Renaud, a very accurate observer, says "he has seen a specimen in the human subject where there appeared to be a third membrane."²

Since the publication of my former account of the corpus luteum, the entire subject has been much discussed and investigated, and a great variety of discrepant opinions expressed on many points concerning it; but on the whole, and although many besides Dr. Lee have differed from me, I believe I do not assume too much, in saying that the weight of evidence is with me; and that the most careful and accurate investigators have come to conclusions in unison with mine; especially as regards the situation of the true corpus luteum, and its value as a proof of conception.

And first, as to its situation: Dr. Paterson, after a lengthened investigation of the matter, but in the human female, and lower animals also, as already alluded to (p. 349), announces, January, 1840, as the result of his observations, that "the substance of the corpus luteum is effused between the two coats of a Graafian vesicle:"³ his opinion of its value as a proof of pregnancy, I will refer to hereafter.

Dr. F. Renaud, whose account of the corpus luteum, "based on dissections and multiplied observations," is, as far as it goes, decidedly one of the best and most accurate, with which I am

¹ Edinb. Med. and Surg. Journ., vol. liii. p. 56.

² Edinb. Monthly Journ. of Med. Sci., Aug., 1845, p. 600.

³ Edinb. Med. and Surg. Journ., vol. liii. p. 55, and vol. liv. p. 390.

acquainted, says expressly in his first paper, written in 1842:¹ "The locality in which the corpus luteum is formed, is so palpably plain to any person who has multiplied dissections, that it need here scarcely arrest attention. The solid matter is interposed invariably between the external or vascular membrane of the Graafian vesicle, and the internal, or non-vascular ovisac; which is always more or less thickened, and has a greater or less quantity of granular or other matter internal to it, in pure specimens." And again in 1845,² the same writer published "the result of four years' research pursued independently of the writings of others, and developing facts simply as they appeared;" and in this second essay, he thus expresses himself: "True corpora lutea are always to be found located between the proper tunics of the Graafian follicle, or in other words, between the two ovisacs."

Negrier's³ opinion is, that the yellow matter is deposited between the coats of the vesicle, at a stage of its development prior to its distension with fluid and final bursting. (See also p. 346.)

Chereau,⁴ in his special *Memoir on the Ovaries*, says that "the corpus luteum always presents:—

"1. A distinct external envelop which is in contact with, and united to the stroma of the ovary, from which, however, it may be entirely separated.

"2. A solid substance of a fleshy, red or yellow appearance, and divided more or less, into lobules.

"3. An internal membrane, which is the ovisac of Baer.

"4. A central deposit of granular matter. The corpus luteum is, in fact, invariably interposed between the external or vascular membrane of the vesicle of De Graaf, and the internal or non-vascular, that is, the ovisac which is always more or less thickened."

Dr. Meigs has given a very minute account of the characters of the corpus luteum in a paper read before the American Philo-

¹ Edinb. Monthly Journ. of Med. Sci., June, 1842, p. 483.

² Op. jam cit., Aug., 1845, pp. 589, 600.

³ Recherches Anat. et Physiol. sur les Ovaires dans l'Espèce humaine. Paris, 1840.

⁴ Mémoires pour servir à l'Etude des Maladies des Ovaires. Paris, 1844, pp. 22, 23.

sophical Society January, 1847, and speaks of it as deposited on the external convex surface of the inner concentric spherule or ovisac of the Graafian vesicle; by the compression of which, as it increases and reduces the internal dimensions of the follicle, it urges the contents towards the least resisting point of the surface of the ovary, and so effects the extrusion of the ovum.¹ So also says De Graaf in a passage to be quoted presently.

Dr. J. C. Dalton, jun., in his elaborate and able "*Essay on the Corpus Luteum*," describes it² "as invested externally by a fine transparent vascular membrane, to which it was intimately attached, and with which it could be readily separated from the rest of the ovary;" but, strangely enough, he asserts "the entire absence of any real lining membrane,"³ while in his drawing of it, plate 2, fig. 2, he represents it with a central cavity exhibiting a distinct white membrane, by which it is completely lined. Dr. Renaud says, that the proper substance of the true corpus luteum is sometimes found both external to and within the internal ovisac: but I cannot remember ever to have seen an instance of this.

While I write, there is before me a section of a corpus luteum (see Plate I., fig. 5) of the sixth month, before making which, I minutely injected the ovary; the corpus luteum measures 6 lines by 5; the yellow wall is from $1\frac{1}{2}$ lines to 2 in thickness, full of injected vessels; in its centre is an oval cavity, measuring 2 lines by 1, lined by a thick, strong, white membrane, which is, beyond all question, the inner coat of the Graafian vesicle contracted, and so thickened, that I have no doubt I could easily split it into two layers, or perhaps even more; outside the yellow wall of the corpus luteum, there is distinctly seen all around it the edge of another white membrane, not nearly so thick as the inner one.

I feel bound, then, to repeat my original opinion, that the corpus luteum of pregnancy is effused around, and on the external surface of, the inner membrane of the Graafian vesicle, which is to be plainly seen lining its central cavity while this latter exists, and afterwards, by the collapse and approximation

¹ Trans. Amer. Philos. Soc., vol. x., part i. p. 132.

² Philadelphia, 1851, p. 62.

³ Op. jam cit., p. 46.

of its opposite surfaces, producing the radiated and stellated white line, or cicatrix, as it is often called, which remains an essential, distinctive character of the true corpus luteum at every subsequent period at which this body is still visible; both which facts are faithfully represented in the figures, Plates I. & II.,¹ and the preparations from which they are taken are all preserved in my museum.

Such an account accords perfectly with that given by De Graaf, whose description of this and many other points connected with the anatomy and physiology of the ovary, has never been exceeded in accuracy; his words are: "Posteaquam testiculorum ova naturalem magnitudinem acquisiverunt, variis tunicis, sive folliculis investiantur; inter quos, immediate post maris congressum, glandulosa quædam materia exerescit, ex quâ, globulorum modo descriptorum substantia componitur. In quem finem, id a naturâ ordinatum sit, inferius explicare conabimur,"² which he does in the following passage: "Judicamus itaque, ova illa e testibus prodire, partim virtute testium, partim etiam ovi ipsius peculiari dispositione. Virtute testium, quatenus inter eorum membranas ovum obvelantes, materia quasi glandulosa exerescit; brevi namque post coitum, ovorum tunicas (quæ antea diaphanæ erant) opacas devenire conspiciamus, multisque sanguineis vasis adornari; *et postero die post opacitatem illam conspectam, inter dictas ejus tunicas glandulosam quandam materiam totum ovum involventem, globulique figuram representantem intueberis, quæ sensim accrescens ovum undecumque comprimendo, illud tandem per foramen in ejus medio conspicuum expellit*; quod in cuniculis tertio post coitum die, in ovibus vaccis, aliisque majoribus animalibus quæ diutius uterum gerunt, tardius evenit."³

In addition to the mechanical agency which De Graaf here supposes to be performed by the corpus luteum, and to which I have already alluded (p. 345; see also p. 351), it is supposed by some, and in my opinion with reason, to contribute also to the evolution and nutrition of the ovum, before it is separated from the ovary.

¹ See Plate I., fig. 8, & Plate II., figs. 1, 4, &c.

² De Organis Mulierum, &c., pp. 185, 186.

³ Ibid., pp. 245, 246.

Thus, M. Plagge regarded the corpus luteum in the ovary as analogous to the placenta in the uterus; he went so far as to assert that the ovum was connected with it by a pedicle; but such connection has never been confirmed by other observers, and is, I believe, imaginary: it appears perfectly reasonable, and indeed unavoidable, to believe, that immediately on its vivification in the ovary, the ovum begins to draw from the surrounding parts a supply for its support and development, though this be not accomplished by means of a pedicle, of which I believe there is no trace; but, it is quite consistent with what we know of the mode in which its early development is carried on in the uterus, to believe that the corpus luteum may perform in the ovary a function analogous to that afterwards discharged by the uterine decidua on the arrival of the ovum in the cavity of the uterus, and subsequently by the placenta; namely, by acting as an intermediate agent, by means of which the materials of support and development are separated from the maternal blood, to be then imbibed by the outer surface of the ovum in its earlier periods of growth; and in its more matured state, by the capillary terminations of the umbilical vein.

The combination of functions above ascribed to the corpus luteum is distinctly referred to by Malpighi in his account of that structure: "*Cujus ope,*" says he, "*ovulum separatur, fovetur, et stato tempore ejicitur.*"¹

Sir E. Home regarded the corpus luteum as an organ, or source of nutrition, and Negrier, whose view of the formation of the corpus luteum has been already referred to (p. 351), speaks of it in similar terms, as "a kind of placenta" for the germ.

This view appears to receive no inconsiderable support from the researches and experiments of Professor Meigs, of Philadelphia; from which, he concludes "that the coloring matter, and the chief constituent bulk of a corpus luteum, is a true vitellary matter,"² with which he found it to agree in structure, or composition, form, color, odor when burning, coagulability, and refractive power.

If we admit the vitelline nature of the corpus luteum, and that

¹ Vide Morgagni, *Adversar.* iv., *Animad.* xxvii., p. 51.

² *Op.* *jam cit.*, p. 265.

it acts as a medium of nutritive support to the ovum *while within the ovary*, its being placed *between* the two layers of its membranous envelop, seems happily analogous to the situation (between the chorion and amnion) of the vesicula umbilicalis, the vitelline organ of supply to the early foetus, *after it has entered the uterus*.

If we examine the ovaries of a pregnant woman, especially if her conception has been recent, we observe that the one which has supplied the germ differs in several remarkable particulars from its fellow of the opposite side: it strikes the eye at once, as being larger, rounder, and more vascular; to the touch, it feels fuller and softer: we perceive, further, that this increase of size of the one, is not so much the result of an increased development of the whole substance or body of the organ, as of the addition to it at one part, of a tumor projecting more or less from its natural outline; as we find in the eye, where the cornea projects from the outline of the globe, the segment of a smaller circle being superimposed on that of a greater.

These points of contrast between the ovaries are well represented in the subjoined wood-cuts: fig. 10 showing the unimpregnated ovary, fig. 11 that which contained the corpus luteum,

Fig. 10.

Fig. 11.

Fig. 12.



and fig. 12 this latter ovary opened and exhibiting the corpus luteum with its central cavity, &c. The woman died in the third

month of pregnancy, and the following are the relative dimensions of the ovaries.¹

Fig. 10. The unimpregnated ovary.

Length . .	1 inch 5 lines.
Breadth . .	7½ "
Thickness . .	5½ "

Fig. 11. Containing the corpus luteum.

Length . .	1 inch 3 lines.
Breadth . .	9 "
Thickness . .	7½ "

The relative sizes of the ovaries in a woman who died in the sixth month of gestation, and had the corpus luteum in the right ovary, were, as given by Rœderer—²

Right ovary.

Length . . .	1 inch 7 lines.
Breadth . . .	11 "
Thickness . . .	6 "

Left ovary.

Length . . .	1 inch 7 lines.
Breadth . . .	10 "
Thickness . . .	3 "

When we examine the protuberant part of the impregnated ovary, we find that the increased vascularity is principally confined to its limits, where we perceive, creeping on, or near the surface, a few small thread-like and convoluted vessels, and we generally find the color of this part quite different from that of the rest of the organ; appearing as a deep, or dull brownish yellow, seen through a slightly reddish medium; and if the examination be made at a very early period after conception, the shade of color may be found of a bluish red, or even slightly purple hue; and somewhere on the surface of the prominent part, we observe a distinct cicatrix, or appearance as of a rent imperfectly united and unhealed;³ this is sometimes of considerable dimensions. Rœderer (pl. vii., fig. 9) represents an ovary of a woman who had borne one child, the cicatrix on which, bounded by lines meeting at nearly a right angle, measures 3½ lines by 3. To a small extent around the cicatrix, or rent, the peritoneal coat appears as if abraded, or removed by slight superficial ulceration; and here it is that the twining vessels, just mentioned, are most distinctly observable; "they are there," says W. Hunter, "so

¹ In these measurements, the line is considered as the twelfth part of the inch.

² *Icones Uteri Humani Gravidi*, p. 45, et Tab. Dimens. Ovar. (No. 38), where several such measurements are given.

³ "Cavam cicatricem referens, qualis ab ulcusculo male curato remanere solet."—*Noortwyk*.

little covered as to give that part the appearance of being bloody when seen at a little distance." (See fig. 11, p. 355, and Plate I, fig. 2.)

This is the point through which the ovulum escaped from the ovary, but it is almost invariably found closed up, and impervious; except it happens to be examined very soon after the passage of the germ, as in the case examined by Sir E. Home and Mr. Clift, where the woman died eight days after impregnation was supposed to have taken place, "the right ovarium had a small torn orifice upon the most prominent part of its external surface. We slit it open in a longitudinal direction, in a line close to the edge of this orifice; the orifice was found to lead to a cavity filled up with coagulated blood, and surrounded by a yellowish organized substance."¹ But, hitherto, my experience has been the same as that of W. Hunter, whose words I may use, for, "in the cases which I have seen, no bristles would pass, it appeared to be an obliterated duct, or passage grown together."²

The external changes, by which we recognize the existence of the corpus luteum in the human ovary, are most obvious in the earlier periods of pregnancy, while there is, as yet, the central cavity, and a greater degree of vascularity and vital action present; these afterwards subside, the cavity begins to close in, and the corpus luteum losing somewhat of its size, the increased bulk of the ovary is proportionably reduced also. In some of the lower animals, the projection of the corpus luteum beyond the surface of the ovary is very remarkable; in cows³ it is constantly found projecting, like a morbid tumor, from the side, or end of the ovary; the same may be said of the sheep, and of animals which, naturally, have the Graafian vesicles very prominent, as the hedgehog, or common sow, in which they absolutely project from the surface: in the latter animal, the ovaries, after conception, appear, literally, like bunches of round berries, from the great prominence of the numerous corpora lutea.

Having satisfied ourselves of the presence of the external characters, we proceed to examine the internal structure; in

¹ Philos. Trans., 1817, p. 254.

² Anatomy of the Gravid Uterus, p. 74.

³ This is very well shown in De Graaf, pl. 14.

order to do which, we should make a section of the ovary, carrying the knife through the centre of the prominent part, so as to divide the ovary into two longitudinal sections, by which we

Fig. 13.



Fig. 14.



Fig. 13 shows the altered form, &c., of the ovary containing the corpus luteum, in the fifth month. Fig. 14 represents it in the ninth month.¹

expose the corpus luteum presenting the following characteristic appearances.

In *form and size*, it is, almost always, more or less oval, or fabiform, with its longer axis varying from four to five or six-eighths of an inch, and the shorter² from three to four-eighths; its thickness is generally less than its breadth. Thus it occupies from a fourth to one-half of the whole area of the ovary, according to the period of gestation at which it is examined, the size being generally in the inverse proportion of the time elapsed since conception, as will be seen in the subjoined measurements, taken from specimens in the writer's collection, and from delineations by others. The corpus luteum described by Dr. John Clarke³ about the end of the *second month* of a tubal gestation, and which, he says, occupied nearly one-half of the substance of the ovarium, measured in length $9\frac{1}{2}$ lines, in breadth 8 lines, central cavity about 3 lines by 2; and the average thickness of the yellow structure all around the cavity, is from 3 to $3\frac{1}{2}$ lines. In a case of ovario-tubal gestation, examined by the writer, where death was supposed to have occurred between nine and ten weeks after

¹ See also Hunter's Plates, xii., xxx., xxxi., Roederer's *Icones Uteri Humani Gravidi*, Plate vii., fig. viii., and Noortwyk, *Anat. Ut. Hum. Grav.*, Tab. iv., fig. iv. Boivin et Dugès, *Malad. de l'Uterus, &c.*, Pl. 3 and 37, figs. 2 and 3.

² "Pene hemisphaericum, avellanae mole."—Haller.

³ Trans. Soc. for Improv. Med.-Chir. Knowledge, vol. i. p. 215, and plate 10.

conception,¹ the corpus luteum was found quite isolated in the ovary, with an opening into its substance; it measured 7 lines by 6, central cavity 3 lines by $2\frac{1}{2}$, and yellow wall from $1\frac{1}{2}$ to $2\frac{1}{2}$ lines in thickness. (See Plate I., fig. 1.)

The corpus luteum represented p. 355, fig. 12, which I took from the body of a woman who died about the end of the *third month* of pregnancy, measures in the longer axis $7\frac{1}{2}$ lines, in the shorter $6\frac{1}{2}$ lines, in thickness $6\frac{1}{2}$ lines; and measuring along the shorter axis the yellow structure is, at the part deepest in the ovary, $2\frac{1}{2}$ lines thick, and at the outer part 1 line: the central cavity measures 3 lines in diameter.

In a specimen taken from the body of a woman who died about the middle of the fourth month of pregnancy, in consequence of a beating inflicted by her husband, the corpus luteum measures 9 lines by 7, and its central cavity $4\frac{1}{2}$ lines by $2\frac{1}{2}$; thickness of yellow wall from 1 to 2 lines: for the original drawing, I am indebted to Dr. M'Keever; the preparation is now in the Anatomical Museum at Cambridge.

A corpus luteum of the sixth month in my collection (Plate I., fig. 5) measures in its longer axis 6 lines, in the shorter 5, and in thickness 3, which are exactly the dimensions assigned by Røederer to the corpus luteum of the same period, in the ovary No. 38, of his table, already described: in mine, the central cavity still existed, and measures 2 lines by 1.

At the ninth month, the measurements of the corpus luteum are, generally, in the longer axis, about 5 or 6 lines, and in the shorter, 4 or 5: one specimen in my possession (Plate I., fig. 10) measures 6 lines by 5; another (Plate II., fig. 1) $5\frac{1}{2}$ by 5; and another (Plate II., fig. 2), attached to a uterus in a state of violent inflammation, measures $7\frac{1}{2}$ by 6. Røederer states the dimensions of the one figured in his plate vii. fig. vii. to be 4 lines by 3, and 2 in thickness; and that in fig. viii. to be 7 lines by 4; and another, described by the same author, at eight days after delivery, measured $4\frac{1}{2}$ lines by 4, and 2 in thickness: one by W. Hunter² measures 6 lines by 5, the woman having died immediately after labor.

¹ See Dub. Med. Journ., vol. ii. p. 191.

² Plate xv., fig. v.

In addition to the above, I subjoin the measurements of two specimens of more than ordinary interest: in the first, pregnancy was of four months' duration, but the ovum had degenerated into hydatids, and the uterus had acquired the size and conditions of six months; in this case, the corpus luteum (Plate II., fig. 7) measured 9 lines by 6; its yellow wall was 1 line to 2 in thickness, its central cavity 6 lines by 3, and the ovary which contained it was 19 lines in length and 15 in breadth. (See p. 220.) The other case was one of twins, in the sixth month, with a single corpus luteum (see Plate II., fig. 6), which measured 7 lines by $4\frac{1}{2}$; the yellow wall was 2 lines in thickness, the central cavity 3 lines by $1\frac{1}{2}$, the ovary which contained it was 15 lines in length and 12 in breadth, while the other ovary was only 13 by 9. The subjoined table shows the dimensions of the corpus luteum and ovaries in a number of cases examined by myself, or reported by others:—

No.	Date from conception.	Authority.	Length in lines.	Breadth in lines.	Thick-ness of yellow wall.	Central cavity.	Impregnated ovary.	Unimpreg-nated ovary.
1	9 months	Roderer	7	4	1½	4 by 2	20 by 9	
2	9 "	"	4	2	2			
3	9 "	"	4½	4	2			
4	9 "	W. Hunter	6	5	1-2	2 by 2	24 by 11	
5	5 "	"	9	7	2-2½	5 by 2	17 by 9	
6	6½ weeks	Dr. Lee	10	8	1-2	7 by 5	20 by 9	6½
7	3½ months	Knox	7	6				
8	9 "	"	4	2½	1½	1½		
9	7 "	Dr. Lee	6	4½	1			
10 ^a	2 "	Dr. J. Clarke	9½	8	3-3½	3 by 2	15 by 12	
11	3½ "	Dr. M'Keever	9	7	1½-2	4 by 2½	17 by 11	
12	2 "	Dr. Lee	6	4	1-1½	3 by 1½	18 by 7	
13	2 "	Dr. Dalton	11	6	1½	8 by 3	12 by 10	
14	4 "	"	10	8	2	6 by 4	12 by 10	
15	7 "	"	6	3	1-1½	3 by 1	18 by 9	
16	7½ "	"	7	5	2	3 by 1	18 by 7	
17	18½ "	"	3	2½	1	none	24 by 8	
18	a few days	Dr. Paterson	7½	6	1-3	5 by 2½	15 by 8	
19	3 weeks	"	9	5	1	7 by 4	15 by 8	
20	6 "	"	7	6	1	5 by 4	15 by 7	
21	2 months	"	6	4	1-2	3 by 1½	17 by 6	
22	9 "	"	4½	4	1½	2	10 by 7	
23	2 "	Dr. Montgomery	8	6	2-1	4½ by 3	24 by 6½ by 4	21 by 9 by 5½
24	2 "	"	8	7	2-1	4 by 3	21 by 10	
25	3½ "	"	7	5		3 by 2	17½ by 10	17½ by 8
26	3½ "	"	6½	4	2-1	3 by 1½		
27	5 "	"	6	4	1-1½	3 by 2	17 by 9½	20 by 8
28	6 "	"	7	4½	2	3 by 1½	15 by 12	13 by 9
29 ^a	4 "	"	9	6	2-1	6 by 3	19 by 15	13 by 9
30	9½ "	"	3	3	1½	none	15 by 7	13 by 6
31 ^a	6 "	"	8	6	1½	4½ by 3	15 by 8	
32	10 mo. 1 wk.	"	4½	4	1½	none	18 by 9	
33	12 months	"	3	1½	½	none	15 by 9	
34	14 "	"	2½	1½	½	none	18 by 8	
35	3 "	"	7	6	1-2	3 by 2½	15 by 9	17 by 7½
36	6 "	"	6	5	1½	3 by 2		
37	9 "	"	6	5	1½	3 by 1½		
38	9 "	"	7½	6	2½	none	21 by 12	
39 ^a	3 "	"	7	6	1½-2½	3 by 2		
40	9 "	"	6	5	2	none	21 by 9	
41	7 "	Dr. Renaud	6	4½	1-2½	2 by 1	14 by 7½	
42	7½ "	"	5	3	1	3 by 1½	24 by 6	
43	7 "	"	5	4	1-1½	3 by 1½	18 by 9	
44	9 "	"	5	4	1	3 by 1	15 by 7	
45	8 "	"	7	3	1-1½	5 by 1	16 by 6	
46	11 "	"	3½	2	1	none	24 by 6	
47 ^a	11 "	"	5½	5	2	2 by 1	18 by 8	
48 ^a	2 "	"	10	3	1-2	none	17 by 7	
49 ^a	3 "	"	9	8	1-2½	6½ by 4	20 by 7	
50	4 "	"	6½	4½	1-2½	3 by 2	17 by 7	
51	7 "	"	5	4	1-2	1½	15 by 8	
52	6½ "	"	7	4½	1-2	4 by 2	15 by 7	
53 ^a	6 weeks	Caseaux	13	5	2-4	none	16 by 11	

¹ In a case of tubal gestation. See Trans. of Soc. for Improv. Med. and Chir. Knowledge, vol. i. p. 215.

² In the case of twins, with only one corpus luteum.

³ In a case of hydatids. See p. 220, and Pl. II., fig. 7.

⁴ In a case of sudden death, from disease of the heart.

⁵ In a case of ovario-tubal gestation. See Dublin Medical Journal, vol. ii. p. 191.

⁶ In a case where death was caused by hemorrhage, with a uterine polypus, five months after abortion, in the sixth or seventh month. See p. 371, fig. 20.

⁷ This corpus luteum is of a very abnormal form. See p. 366, fig. 17.

⁸ In a case of tubal gestation, where the corpus luteum was found in the left ovary, while the fetus was developed in the right tube.

⁹ In a case of death at six weeks of pregnancy, the corpus luteum being of unusual size and singular conformation. See p. 366, fig. 15.

It is obvious, from the above statements and table, that there is considerable difference in the size of this structure, at the same period of gestation, in different instances; this depends on the size of the Graafian vesicle around which it may have formed, the rapid or retarded closure of the central cavity, and the degree of vascular activity existing. Thus, in a specimen at the fifth month, delineated by W. Hunter,¹ the corpus luteum measures 9 lines by 7, its central cavity 5 by 2, and the thickness of the yellow wall varies from 2 lines to $2\frac{1}{2}$; while in another specimen at the same period observed by myself, the dimensions were 6 lines by 4, central cavity 3 by 2, and thickness of yellow wall 1 line to $1\frac{1}{2}$; and in another above-mentioned, where violent inflammation was present, the dimensions were unusually great after delivery at the full time. But the general rule remains unaffected, viz: that the corpus luteum is largest at early periods of pregnancy, and afterwards gradually diminishes in size; slowly during gestation, but more quickly after delivery. It will be observed, also, that the yellow wall in general measures from 1 to 2 lines in thickness, between the two layers of the Graafian vesicle; but different parts of it vary much in this respect in the same specimen; the parts which lie deepest in the ovary being considerably thicker than the more superficial, and especially near the situation of the aperture through which the ovum escaped; and moreover, we sometimes find almost the whole growth of corpus luteum at one side; thus, in a specimen in my possession, at two months of pregnancy, the yellow substance exists only round a little more than one-half of the vesicle, in the form of a crescent.

Its structure is strikingly glandular in appearance, having a lobulated arrangement with slight convolutions, resembling not a little a section of the human kidney; and in many specimens giving to the eye the semblance of radii passing from the centre towards the circumference; or, as some one has said, it is like a miniature of the particular section of the brain called by anatomists *centrum ovale*. De Graaf describes it as "*Glandularum conglomeratarum adinstar*."² Röederer³ designates its structure

¹ Plate xxix., fig. 3.

² De Organis Mulierum, &c., p. 117.

³ Icones, &c., p. 45.

as "fleshy or glandular," and compares it to that of the suprarrenal capsules, which the specimen (Plate I., fig. 1) very much resembles. William Hunter describes it as "tender and friable, like glandular flesh;"¹ and still more recently Chereau speaks of it as "d'une texture comme glanduleuse, et très vasculaire."² It is hardly necessary to say that, speaking strictly, this body could not be considered glandular, no more than it could be properly called a deposit of lymph or of blood, though both unquestionably enter into its composition and original formation; but after its complete organization it must be regarded as possessing a peculiar structure not identical with any of these, but really *sui generis*, and formed for a special purpose.

Its consistence varies, according to the period after conception at which it is examined; when of very recent formation it is comparatively soft, with scarcely more firmness than that of a coagulum of blood, but as the interval after conception increases, it becomes much more firm and condensed.

It is very vascular, especially at early periods of pregnancy, small vessels being very frequently visible without any preparation; but if fine, colored injection has been previously thrown into one of the branches of the spermatic arteries going to the ovary, the vessels of the corpus luteum will be filled with the coloring matter, and are to be seen very distinctly running from its circumference towards its centre; or, to express it in the words of W. Hunter, "its larger vessels cling round its circumference, and thence send their smaller branches inwards through its substance." The injection will also pass readily and freely into the little serpentine vessels on the surface of the ovary, over the corpus luteum, and around the rent in the external covering (see fig. 11, p. 355, and Plate I., fig. 2); and, not unfrequently, some of the injection is found extravasated into the central cavity, especially at early periods after conception. After the conclusion of gestation, when the substance of the corpus luteum has diminished in bulk, and becomes more condensed in texture, its vessels are gradually obliterated, and will receive the injection only sparingly, or not at all. I think it could only be from not

¹ Anatomy of the Gravid Uterus, p. 14.

² Op. jam. cit., p. 23.

having taken the precaution of injecting the specimens which he examined, that so close an observer as Dr. Dalton falls into the error of stating that "the substance of the convoluted wall is non-vascular; and the vessels exist only in the interstices of the folds."¹ The fact is, that it is so full of vessels, that a successful injection with vermilion will make its substance as red as a ripe cherry, as is well shown in Plate II., figs. 1, 2.

Its color is, as its name implies, a dull yellow, very similar to that of the buffy coat of the blood; exhibiting, generally, when recently exposed, a slightly reddish tinge; "*ex flavo rubens*," Haller; "*ex luteo rubens*," Bæer; "*e rubella flava*," Roederer (see Pl. I., fig. 3). This description, however, applies only to the human subject, as the color varies in different animals; in sheep, it has a slightly pinkish shade; in sows, reddish; and in cows, a bright orange-yellow. In the human subject, the color varies according to the period of gestation, or interval from the time of conception; the corpus luteum being, at first, of a dull red, or sometimes a pinkish hue, but as time goes on, it assumes the dull yellow color from which it derives its name; if the ovary has been previously injected, the corpus luteum will of course be found partaking strongly of the color of the injection used. Its centre exhibits either a cavity (which, at early periods of gestation, contains a coagulum of blood), or a radiated, or branching white line, according to the period at which the examination is made; if within the first three or four months after conception, we shall, I believe, almost always find the cavity still existing, whether containing a coagulum or not, and of such a size as to be capable of containing a grain of wheat at least, and very often of much greater dimensions;² this cavity is surrounded by a distinct white cyst (the inner coat of the Graafian vesicle), and as gestation proceeds, the opposite parts of this cyst approximate, and, at length, close together, by which the cavity is completely obliterated, and in its place there remains an irregular white line, whose form is best expressed by calling it radiated or stelliform. Of this latter appearance, it ought to be observed here that it is visible as long as any distinct trace of the corpus luteum remains,

¹ Essay on the Corpus Luteum, p. 74.

² See Plate I., figs. 3, 4.

and forms one of the most essential characters distinguishing this body from every other that might be confounded with it.

I am unable to state exactly at what period the central cavity disappears, or closes up to form the stellated line, or white cicatrix. I think I have almost constantly found it existing up to the fourth month; but nothing even approaching to a rule can be laid down on this point; it is not to be found in some instances at earlier periods, and then, on the other hand, I have seen it existing after mature delivery; and so, of course, with regard to the central cicatrix, it is found in some instances, much earlier than in others,¹ in some its markings or outline being very distinct, while occasionally it is so diffused and irregular, as to be difficult of detection; in one specimen in my collection, in the fourth month it is very indistinct, and the whole substance of the corpus luteum is intersected by septa running in all directions: (see Pl. I., fig. 6; see also the figures in p. 366.) I wish to observe here that we cannot always ascertain with certainty the exact state of this matter, and our section of the corpus luteum may fail to display the stellated cicatrix, or even a small cavity, should it exist, in consequence of considerable inequality in the thickness of the yellow wall, as already noticed, by which the radiated cicatrix, or white line, is thrown so much to one side, that it escapes division by the knife.

Occasionally, we meet with a corpus luteum made up of numerous convolutions thrown together so irregularly that it would be very difficult to detect any formal pattern or arrangement of the parts, as in the figures above referred to.

After the period of gestation has been completed, or the contents of the uterus prematurely expelled so that gestation ceases, the corpus luteum soon begins to exhibit a very decided alteration in all its characters, until, at length, it is no longer to be found in the ovary. As gestation draws towards its mature termination, and afterwards, the corpus luteum undergoes a process of atrophy, and the changes which take place in it are not confined to the diminution in its size, it becomes altered in all its characters; its color fades and changes to a different hue, its vascularity diminishes and is gradually lost altogether; the yellow

¹ See Fig. 17, p. 366.

wall becomes thicker, its texture is condensed,¹ the convolutions are in general no longer visible, and the central cavity has be-

Fig. 15.



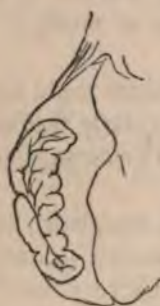
Ovary of a woman who died when six weeks pregnant. See Table, p. 361. No. 53. (From Caseaux, *Traité des Accouchemens*, p. 74.)

Fig. 16.



Corpus luteum at the termination of pregnancy. (From Dr. Dalton's *Essay*, p. 67.)

Fig. 17.



Corpus luteum of eight weeks.

Fig. 18.²

Corpus luteum after abortion.

come a white line, or zigzag cicatrix. In speaking, hereafter, of the distinction between the corpus luteum of pregnancy and that

¹ The gradual decline and ultimate disappearance of the corpus luteum is very distinctly noticed by De Graaf and Røderer: the former observes: "Enixō jam fœtu, globuli illi rursus imminuuntur ac tandem evanescent."—*De Organis*, &c., p. 178. And Røderer remarks: "Post puerperium eo magis contrahi et indurari illa corpora videntur quo remotior fit partus."—*Icones*, &c., p. 43.

² Figures 17 and 18 are from Dr. Renaud's Paper.

of menstruation, the different relations observed between the change of color and the development of the yellow substance will be insisted on as among the distinguishing marks in the two kinds.

The exact period of its total disappearance, I am unable to state; but I have found it distinctly visible so late as at the end of five months after delivery at the full time, but not beyond this period; and the corpus luteum of a preceding conception is never to be found along with that of a more recent, when gestation has arrived at its full term; but in cases of miscarriage repeated at short intervals, it may.

Nothing is more certain than the persistence of the corpus luteum up to the time of mature delivery (see Plate II., figs. 1, 2), and for no short period afterwards. Figs. 7 and 8 of Plate I. represent the right ovary of a woman who died sixteen days after delivery; fig. 7 shows the external surface of the ovary with the cicatrix of an angular form near its upper part, and still slightly vascular: fig. 8 shows the same ovary laid open by a section carried through the corpus luteum, which, in this case, was rather smaller than it usually is at such a period, measuring only $3\frac{1}{2}$ lines by 3: but its vessels were still permeable, and some of them are seen injected; the stellated central line is very distinct.

In another preparation, which shows the appearance of the corpus luteum in a woman who died of pneumonia, exactly five weeks after delivery, at the full time, it is much diminished in size, measuring only 4 lines by $3\frac{1}{2}$ (see Pl. II., fig. 3), is closer in its texture, and its color was becoming indistinct in numerous points, so that it appeared paler, but the radiated central line is quite distinct; its vascularity, also, was diminished, as fine injection could not be made to pass into it: the external surface of the ovary exhibits the greater size and prominence of one part, and the fissure on it is still well marked; it is particularly deserving of recollection here, that there is *only one cicatrix* observable on each ovary, although the woman from whom they were taken had borne six children.

In another specimen in my museum, taken from the body of a woman who died in the twelfth week after delivery, the external prominence was greatly diminished, but was still sufficiently obvious to indicate the exact situation of the corpus luteum, as

was also the superficial cicatrix: the corpus luteum itself had lost much of its color, and what remained became, on immersion in spirits, of a light gray shade: the texture of its substance was much more condensed,¹ and resembled that of a cut apple; its dimensions are much reduced, being scarcely 3 lines, by less than 2, but the central radiated white line is distinctly observable: (see fig. 4, Plate II.)

Lastly, in the case of a young woman who died *five months* after giving birth to her first child, the ovary retained very little of its increased size or altered form; the prominence was hardly to be recognized; but the external cicatrix was perfectly obvious. When opened, the corpus luteum exhibited its peculiar color only in one very small spot, measuring very little more than one-eighth of an inch in length, and one-sixteenth in breadth, but still exhibiting in its centre the irregular white line (see Pl. II., fig. 5); the yellow color very soon completely disappeared when immersed in perfectly pure rectified spirit diluted with water; which does not happen except in a slight degree, when the corpus luteum, taken during gestation, or just at the time of delivery, is placed in contact with the same fluid.

In a young woman of twenty-two, who died of dropsy, in St. Bartholomew's Hospital, *six months* after delivery, an elevation is reported as being visible on the surface of the ovary, rising about a line and a half, and forming "part of a rounded body between three and four lines in diameter, of a firm and dense structure, presenting in its centre a white radiated cicatrix surrounded with a dark grayish substance, passing between, and marking the outline of the rays of white. In the centre of the cicatrix there was an indistinct gray, small spot. On the surface of the elevation, a small piece of tissue, like a membranous adhesion, hung loosely; and in the same ovary, there was a cyst filled with a grumous yellow matter. The appearance of the cicatrix was

¹ This and the other specimens here described illustrate well Roderer's description, who thus sums up his observations on the progressive changes which the corpus luteum undergoes: "Facile exhaustus, de corpore luteo expositis apparet, carneam quasi, vel glandularem per graviditatem, substantiam esse lutei corporis, sensimque in scirrhum flavum indurari, mediumque nucleum fuscum formari; contrahi porro illam substantiam penitusque tandem perire."—*Icones*, &c., p. 45.

almost precisely that described by Dr. Montgomery, as found five months after delivery; the minute yellow spot, however, was not visible here, and the outline of the radiated cicatrix was better marked."¹

Dr. Renaud says he thinks he has "seen a true corpus luteum existing as a dense capsule, as late as the seventh month after delivery." His description is as follows: "On the upper and depending surface of the right ovary there existed a button-like protuberance, bearing in the centre a triangular cicatrix, and measuring $3\frac{1}{2}$ lines in diameter. It was whiter than the remainder of the ovary. Bloodvessels were yet seen ramifying on the upper surface of the prominent body. Beneath the cicatrix, was a cavity capable of holding a pea, bounded by a dense, white, and corrugated capsule, about one-third of a line in thickness."²

Dr. Dalton describes a corpus luteum observed so late as nine months and a half after delivery; there was found, he says, beneath a cicatrix on the surface of the ovary, "and evidently connected with it, a solid body, having a nearly circular section. This body was *little, or not at all distinguishable in color* from the rest of the ovarian tissue, and might easily have been overlooked in a hasty examination. On close inspection, however, it was seen to be imbedded in the substance of the ovary, from which it was separated by a sufficiently distinct line of demarcation. It contained, in its centre, a body rather whiter and more opaque than the external parts, while the latter, on minute examination, presented indications of being traversed by radiating lines. The whole body was similar in consistency to the rest of the ovary, and could not be felt at all from the outside (see fig. 19). It had no yellow nor red coloration in any part."³ I find this body, as figured by Dr. Dalton, measures three lines by two and a half, and is consequently much

Fig. 19.



¹ Lond. Med. Gaz., Sept. 30th, 1837, p. 25.

² Edinb. Journ., *ut supra*, 1845, p. 605.

³ Essay, *jam cit.*, pp. 70, 71.

larger than in the instance observed by me at five months after delivery; but any one who has examined many of these formations, must have observed how much more rapidly they diminish in size and alter in other characters in some instances than in others; in illustration of which I may refer, in addition to those observed by myself, to another case reported by the same writer, p. 69, in which the corpus luteum, *nine weeks* after delivery, was so indistinct as scarcely to be recognized; it was situated beneath a depressed cicatrix. "The color of this body was very similar to that of the ovarian tissue. Its section was slightly oval, about a quarter of an inch in diameter, and presented an opaque, whitish, central mass, external to which, traces of a convoluted structure were visible, on close examination. The whole aspect of the body, however, was obsolete and inactive, and its markings quite indistinct."

It is to be observed, with reference to the former of Dr. Dalton's cases, that "there were morbid appearances about the os and upper part of the vagina;" and I shall presently relate a case by Dr. Renaud, in which the corpus luteum, associated with uterine polypi, was found in a state of great perfection, both as to size and other characters, five months after delivery, at about the seventh month.

Negrier thinks that "five to six months are sufficient to reduce the most voluminous corpus luteum to the size of a grape-seed," and that after two years, a bluish stain is often the only vestige that remains.¹

A case lately sent me by Dr. F. Renaud seems to show that certain morbid conditions of the uterus may have the effect of preventing, or, at least, retarding, the decline and atrophy of the corpus luteum after delivery.

A young woman was prematurely delivered about the sixth or seventh month of pregnancy, and in rather less than five months afterwards, died exhausted from hemorrhages. After death, two or three small fleshy polypi were found in the uterus, and the corpus luteum, which was in the right ovary, had undergone no degenerative change, and measured $5\frac{1}{2}$ lines by 5, yellow wall 2 lines in thickness, and a central cavity 2 lines by 1. See sub-joined figure.

¹ Recherches, &c., *jam cit.*, p. 79.

Now I think we may look upon the uterus so circumstanced, as in a great degree in a condition analogous to that of pregnancy; having the enlarged condition of its vascular apparatus and developed state of its tissues sustained and prolonged by the disease, which was, in reality, a kind of utero-gestation of growths receiving a sanguineous nutritive supply from the vessels of the organ. Some eminent investigators think that the true corpus luteum leaves vestiges of a very permanent character; thus Dr. Allen Thomson states that in "the human species, it always leaves some mark,"¹ the nature of which, however, he does not describe; and Kölliker, after alluding to the gradual atrophy of the corpus luteum being slowly continued up to the time of mature delivery, when he thinks it measures on an average about 4 lines, adds that it "afterwards diminishes more rapidly, until ultimately, after some months, the metamorphosed Graafian follicle has entirely disappeared, or become reduced to a diminutive, variously-colored corpuscle, which, undoubtedly, may still exist for a long time, and perhaps is not removed altogether for some years. Such arrested *corpora lutea* (*corpora albicantia* and *nigra* of authors), at first, retain a distinct limitation, a dentate nucleus, containing a minute cavity of a grayish-white or red-brown, even black, color, depending on altered *hæmatin*, and a cortical substance presenting various tints of yellow, or yellowish-white, or even quite white, and often still distinctly plicated, but subsequently they become mere amorphous spots, coalescent with the *stroma* of the ovary."²

That such vestiges do remain in the ovary for a very long time, cannot be doubted; but they are too obscure and equivocal to be practically useful, and, for my own part, I am under the necessity of repeating, that beyond the period already stated, namely, five months after mature delivery, I have never been able to detect satisfactorily the remains of the true corpus luteum.

Fig. 20.



¹ Todd's Cyclop. Anat., &c., vol. ii. p. 450.

² Manual of Human Histology, vol. ii. p. 253.

The vulgar notion, however, is, that it is a permanent structure, and that, consequently, we have only to examine the ovaries after death, to enable us to tell not only whether a woman has borne children, but the exact number of her offspring, from the number of corpora lutea existing in the ovary: see p. 341. This is quite an error, and probably arose from a misconception of the meaning of such an expression as that of Haller, when he says: "Numerum credo eundem esse, qui est foetus";¹ or, as in another place: "Numerus corporum luteorum est in ratione foetus."² By this expression, however, he only meant that their number was the same as that of the foetuses lodged in utero in one gestation, which indeed we find expressly stated by De Graaf, whose words are: "Deteguntur, unus aut plures, prout animal, ex illo congressu, unum aut plures foetus in lucem edet."³ A rule, I may observe, which must be *modified* in more than one respect, as we shall presently see; for, occasionally, a corpus luteum may be discovered without a foetus, or a greater number of them than there are foetuses produced at the time. Thus, in one instance, I found two corpora lutea in the ovary of a woman who killed herself by medicine taken to produce abortion. She was reported to have expelled but one ovum. Haller notices this occasional occurrence, and explains it thus: "Si unquam, absque foetu, corpus luteum in ovario repertum est, quod est rarissimum, credibile est, eum foetum abortu perditum, aut alio modo destructum, disparuisse."⁴ I have had several opportunities of verifying this observation, and, amongst other instances, I once found ten corpora lutea in the ovaries of a sow, but only nine foetuses in the uterus; but at length, after a very diligent search, I discovered, in one of the cornua, the remains of another foetus which had been blighted, and was in a state of partial decomposition. Haighton also observed this occurrence, but adds that "the uterus, in these cases, has borne the marks of an early and recent abortion;"⁵ and Cruikshank, as mentioned in another place, speaks of the corpus luteum as a certain mark of conception, "whether the embryo is

¹ Elem. Physiologiæ, vol. viii. p. 36.

² Op. Min., vol. ii. p. 457.

³ De Organis Mulierum Generat., &c., p. 178.

⁴ Elem. Physiologiæ, vol. viii. p. 36.

⁵ Philosophical Transactions for 1797, p. 166.

visible or not."¹ Raciborski says: "Toutefois il n'est pas rare, de trouver chez les multipares, plus de corps jaunes que de petits."²

Dr. Dalton's observation xiv. is that of a woman who died in the seventh month of pregnancy; in her left ovary were found two well-developed corpora lutea, although there was but one child: but in the tube were discovered the remains of an early ovum which had been blighted.³

Dr. Renaud has communicated to me the particulars of a case in which a woman died of thoracic disease, undelivered, in the seventh month of gestation; in one of her ovaries were found two corpora lutea, each of which, he says, was fleshy looking, and had a central and radiating membrane; each was lobulated in character, and inclosed between the ovisacs; one was much larger than the other, yet each was sufficiently characteristic. The woman had not suffered abortion of one foetus; and a very careful examination of the uterine contents failed to detect any appearance of a blighted ovum. There was but one foetus.

Such facts as those ought to go a great way in answer to the objection made by some, who deny the necessary connection between the existence of the true corpus luteum, and impregnation and conception, because the former has been found, where no ovum could be discovered.

I believe it will hardly be doubted, that, not unfrequently, women conceive and exhibit the early symptoms of pregnancy, but the ovum perishing soon after, no positive evidence of its existence is ever obtained, a contingency which did not escape the acute mind of Harvey, who expressly notices it: "For although," says he, "the woman conceiving after intercourse, sometimes produces no foetus, yet we know that phenomena occur, which clearly indicate that conception has really taken place, although without result."⁴ Then again, those who have most carefully examined, "with all appliances and means to boot," best know how difficult it often is to detect an early ovum, even when the result proves its existence. This is justly insisted on by Professor Bischoff, in his "Essay on the Physiology of Menstruation and

¹ Philosophical Transactions for 1797, p. 200.

² Op. jam cit., p. 512.

³ Op. jam cit., p. 60.

⁴ Works, Sydenham Society Ed., p. 576.

Conception," where he gives minute directions for the best mode of conducting such a search, and dwells on the great difficulty in attaining success; and afterwards states, with regard to two of the cases related by him, viz., the eighth and tenth, that although the perfection of the corpus luteum, together with the state of the uterus and other circumstances, led him to the conclusion that conception had taken place, yet after the most diligent search, no ovum could be found.

From such facts, follows of necessity this circumscription of the conclusion to be drawn from what we may observe in the ovaries, viz., that the presence of a true corpus luteum does not prove that a woman has *borne a child*, although it would be a decided proof that she had been impregnated and had conceived; because it is quite obvious, that the ovum, after its vivification, may be, from a great variety of causes, blighted and destroyed long before the foetus has acquired any distinct form. It may have been converted into a mole, or hydatids, and a perfect corpus luteum be found, as in case p. 220; see Pl. II., fig. 7. Thus, however paradoxical it may at first sight appear, it is nevertheless obviously true, that a woman may conceive, and yet not become truly with child.

But the converse will not hold good. I believe no one ever found a foetus in utero, without a corpus luteum in the ovary; and that the truth of Haller's corollary, "*nullus unquam conceptus est absque corpore luteo*,"¹ remains undisputed and indisputable.

Well, then, we have seen above, that the number of corpora lutea may be greater than that of the foetuses discovered or existing; and it now becomes necessary to determine whether on the other hand the number of foetuses may exceed that of the corpora lutea, in consequence of more than one ovum being contained in the same Graafian vesicle, so that after the birth of twins, only one corpus luteum may be found in the ovary; and this decision is the more required, because some eminent authorities have pronounced rather positively against it. Thus, Wm. Hunter says: "When there is only one child, there is only one corpus luteum; and two, in the case of twins. I have had opportunities

¹ Opera Minora, vol. II. p. 458.

of examining the ovaria with care, in several cases of twins, and always found two corpora lutea. In some of these cases, there were two distinct corpora lutea in one ovarium; in others there was a distinct corpus luteum in each ovarium."¹ And more recently we have M. Raciborski thus stating the result of his observations: "N'ayant jamais rencontré chez les animaux, moins de follicles de Graaf qu'il n'y avait de fœtus, nous croyons être autorisé à reconnaître dans cette particularité, l'expression d'une loi que la nature a voulu sans doute faire partout rigoureusement observer; et nous sommes porté à croire, qu'il doit en être de même dans les conceptions doubles chez la femme, et qu'il ne doit jamais y avoir deux ovules dans le même follicule de Graaf."² But I have incontestable proof, that two ovula are occasionally contained in one Graafian vesicle, and that after the birth of twins only one corpus luteum may exist in the ovary. Some years since, a woman named Keefe died, in Sir Patrick Dun's Hospital, after giving birth to twins of six months, male and female, and on examination by myself, one large corpus luteum only was found in the right ovary, and none in the left: see Pl. II., fig. 6, and table, p. 361, No. 28. It is only justice to Baer to quote his observation to the same effect: "Denique afferam, me bina ovula semel in canis vesiculâ distinctissime vidisse, et aliâ vice, bina ovula in scrofæ vesiculâ vidisse, me putare; unde, numerus ovarum a corporum luteorum numero nonnunquam diversus, facile explicandus est."³ I may observe, that my case is also a decisive refutation of the idea of those who maintained that male and female germs are contributed by different ovaries; for here, both sexes were produced from germs contained in the same vesicle.

Another anomaly, of a different kind, deserves to be noticed here, namely, the corpus luteum being found in the ovary of the opposite side from that of the uterine horn, or tube, in which the ovum is developed. I remember to have read, several years ago, a case of this kind, recorded by some continental writer, but cannot recall the authority, or where the case is to be found.

¹ Anat. Grav. Ut., p. 14.

² De la Puberté, &c., p. 512.

³ De Ovi Mammalium et Hominis Genesi, &c., p. 18.

Very recently, Dr. F. Renaud, of Manchester, has communicated to me the particulars of a case of tubal foetation, in which the mother died from hemorrhage arising from the bursting of the Fallopian tube, and the corpus luteum was found in the ovary of the left side, while the ovum had been developed in the right oviduct. The second, or right ovary, was not found, which, of course, invests the case with a degree of doubt, so far; as, had the missing ovary been found, it also might have contained a corpus luteum.

To account for this anomaly, Dr. Renaud thinks it might be assumed that, by some irregular action, the fimbriæ of the opposite oviduct were so altered in position, as to clasp the ovary that did not properly correspond to it. A different explanation of this deviation is suggested in reference to a case, not long since recorded by Professor Scanzoni,¹ which he entitles "a case of pregnancy in a rudimentary horn of the uterus, with probable advance of the ovum from the right ovary into the left horn of the uterus."

In July, 1852, conception took place. On the 21st of November, the woman had a quarrel with her husband, complained of colicky pains in the left hypogastrium, became weak, and died that night.

On examination, there was found a laceration *on the left side of the uterus*, in which were the membranes and placenta of the foetus; the corpus luteum was *in the right ovary*.

Scanzoni refers to a case by Rokitansky,² as another instance of pregnancy in a rudimentary horn of the uterus; but I think, both are instances of what has been called interstitial pregnancy; in which, the ovum is developed in the ad-uterum, or portion of the Fallopian tube which passes through the substance of the uterus: and so constitutes an intermediate link between uterine and tubal pregnancy.³ But the peculiar interest of this case to us, at present, is the fact that the corpus luteum was found in the ovary of the side not corresponding to the site of the ovum; suggesting, in the opinion of the commentator on the case, in the

¹ Verhandlungen der Phys. Med. Gesellschaft in Würzburg, Bd. iv., 1853.

² Manual of Pathological Anatomy, vol. ii. p. 277.

³ See Repertoire Gen. d'Anat. et de Physiol., &c., No. 1, p. 123.

Edinb. Med. and Surg. Journal,¹ the idea that the ovum, after descending from the right ovary, must have passed through the uterus, and into the tube or horn of the opposite side.

Seanzoni states, that many analogous observations have been made in the lower animals; but he is mistaken in supposing that his own is the first in the human subject.

As in the case of the supposed permanency of the true corpora lutea, already noticed, a similar and equally erroneous idea obtains, very generally, with regard to the cicatrices on the surface of the ovaries, which have been already noticed as marking the situation of the corpus luteum. These are supposed, by many, to be permanent and ineffaceable, and of course, certain indications of the number of children borne by the woman during her life, or of the number of times she had conceived. But such is not the case: the ovaries of women who have borne several children, will sometimes be found exhibiting only one or two of these rents or marks on the surface, a very distinct instance of which has been already noticed (p. 368), the woman in this case, having given birth to six children, and yet the ovaries exhibited only one cicatrix on each. I have been in the habit of exhibiting, at lecture, a uterus taken from the body of a woman who had borne seven children, the youngest of whom was four years old at the time of the mother's death, and there was not even one cicatrix on either ovary. On the other hand, the effects of inflammation, or the bursting of small abscesses in the ovary, or still more commonly, the rupture of Graafian vesicles at the times of menstruation, may produce cicatrices, which cannot be distinguished from those caused by the escape of the impregnated ovum.

Both the positions here advanced are in opposition to the generally received opinion, especially the former, that the cicatrices are not permanent; but having taken much pains to assure myself, with certainty, of the real state of the case, I feel no hesitation in announcing both conclusions as perfectly established by facts. The occurrence of the cicatrices on the surface of the ovaries, without previous conception, is noticed by De Graaf²

¹ No. 198, for January, 1854, p. 202.

² *De Organis Mulierum*, &c., p. 173.

and Roederer, the latter of whom gives an engraving of them, of which the subjoined is a copy :

Fig. 21.



And he says the drawing was made for the express purpose of showing the number of these cicatrices, although the woman had never been with child: "Eo scopo icon delineata est, ut membrane externae cicatrices, sulci, vel foveae satis copiosae appareant, femina licet uterum nunquam gestaverit."¹ See also Morgagni's account of a virgin of seventeen, who had cicatrices on the ovaries;² and, still more recently, Pouchet (*op. jam cit.*, p. 184).

Some of our systems of medical jurisprudence are lamentably inaccurate on these points; in one, we actually find the cicatrix on the surface of the ovary considered as the corpus luteum,³ and it would be easy to refer to more than one modern system of midwifery, in which the same error is to be found.

Having thus far described the characters of the true corpus luteum as accurately as repeated observations and dissections of a great number of women, and a much larger number of brute animals have enabled me, I wish to declare first that I never, in any one instance, saw the human corpus luteum having the characters here described as belonging to it, except in females who had previously been impregnated; and my firm conviction is that such a corpus luteum was never found in a virgin. It is of course notorious that depositions of yellow matter originating in causes

¹ *Icones Uteri Hum. Grav.*, pl. vii., fig. 5, pp. 38-42.

² *De Sed. Morb.*, epist. xii., art. 28.

³ "In the place from which one of these bodies (ova) had been conveyed, a cicatrix was formed, which received the name of corpus luteum.—*Smith's Principles of Forensic Medicine*, p. 489, ed. 1821; see also a passage from Mason Good, already quoted, p. 340, note.

quite unconnected with intercourse between the sexes, are frequently found in the Graafian vesicles as well as in other parts of the ovary; from their color, these abnormal or morbid formations may be designated corpora lutea; but they differ essentially from the body which we have been considering; as I hope to place beyond a doubt in a subsequent part of this chapter.

As, however, different and very opposite opinions have been entertained on this subject, it becomes necessary to examine them, and ascertain their value. The views entertained by those who deny the necessary connection between the formation of the corpus luteum and sexual intercourse followed by conception, are principally two. According to the one, the corpus luteum is a provision for conception, by which the ovum lodged within it is prepared and fitted for impregnation. According to the other view, the corpus luteum is properly the effect of impregnation, but may also be produced by other adventitious circumstances causing high excitement of the generative apparatus, independently of sexual intercourse. The first of these opinions is generally supposed to have originated with the late Sir E. Home; but it is only justice to say that he merely revived a theory which had been exploded, and had lain dormant for a long series of years, as appears very clearly from a passage in Wrisberg. This writer, after stating that multiplied observations, both in the human race and in quadrupeds, proved that the corpus luteum was not to be found in the ovaries "*ante congressum fœcundum et independentem conceptionem*," adds, "*ruit itaque ingeniosum, potius quam naturæ congruum, de usu et functione corporis lutei, latum judicium, conceptionis materiem ex parte sexus sequioris, comprehendere et secernere.*"¹ The opinion here alluded to, which was that of Malpighi, Santorini, Valisneri, and Bertrandi, most probably arose from their having found (as many others have also) the corpus luteum formed, before the expulsion of the ovum from the ovary, but not before its impregnation. It is remarkable that Sir E. Home should have promulgated it anew, without even noticing its former existence, and that he should have done so on the data furnished to him by a single case,² in

¹ Vide paper by Wrisberg, in Trans. Soc. Reg. Göttinge for 1781.

² This he himself declares; vide Philos. Trans., 1817, p. 255.

which he examined the body of a young woman who died a few days after conception, when he found, what he apparently without much reason supposed to be an ovum in the uterus, and a corpus luteum in one of the ovaries. From this he concludes at once that this was the commencing provision for a future conception, not the result of the former; but the reasons are not stated.

It has been already shown that a similar notion was entertained many years ago, and its accuracy disproved by observation; but it is not altogether satisfactory, nor consistent with the spirit of philosophic inquiry, to reject an opinion merely because it has been already exploded, however high may have been the authority for its rejection. We must, therefore, examine this doctrine upon its own merits before we can refuse it our assent. In the first place, then, if such a statement were correct, perfect true corpora lutea ought to be found in the ovaries of almost all women examined just before or during the period of life in which they are apt for conception. No one has ever asserted that this is so; and in point of fact we know that it is not the case. In the second place, if such were the relation of the corpus luteum to conception, it ought to be found in a state of greater development as the distance of time from the former conception increases; whereas we have brought forward demonstrative proof that exactly the contrary happens (see p. 367, *et seq.*). In the third place, we find that their number corresponds, with occasional rare exceptions, to the number of fetuses engendered in the *existing* or *preceding* pregnancy; or, to speak more accurately, to the number of Graafian vesicles which have been the seats of recent impregnation, as just now explained.

Such objections might easily be multiplied, but those already stated appear sufficient for our purpose. The other assertion, as made for instance, by Pouchet¹ and Raciborski,² that corpora lutea, in no respect differing from those which accompany pregnancy, may be produced independently of conception, or even of intercourse, during periods of high sexual appetite, or at the times of ordinary menstruation, requires a very careful examination, inasmuch as if it be really borne out by facts, the presence

¹ De l'Ovulation Spontanée, p. 185.

² De la Puberté, &c., p. 511.

of the corpus luteum in the ovary would cease to be of any value whatever as a proof of impregnation; and believing, as I think I have full grounds for doing, from a very long continued examination of the subject, that the corpus luteum presenting, well developed, all the characters and conditions which I have assigned to it, is the result of conception, and of nothing but conception, I think it is beyond question that some of the assertors of this doctrine, from which I dissent, have mistaken for true corpora lutea, and described as such, accidental formations in the ovaries, having no one character except the color of the bodies which really deserve the name.

Before proceeding further, I wish to observe, that the designations *true* and *false*, so generally applied to these structures, must be understood as used in a special or conventional sense; each kind is, of course, equally true, as the result of a peculiar action having the power to produce them, but it is in reference to the state of pregnancy, that they are thus distinguished; those being called *false* which arise from some action, or cause independent of actual conception, while those only are designated *true*, which result from that special cause: and any one who has paid attention to the writings of authors on this subject, cannot fail to have perceived, that much of the difference of opinion which exists as to the value of the corpus luteum, as a proof of previous coitus and impregnation, has arisen from their not always specifying, with sufficient clearness, which of the two kinds form the subject of their observations.

Thus, in the account given by so accurate a writer as Bischoff, there would appear, at first, a contradiction, because, in one place, he says that a corpus luteum is no proof of previous coitus, because it may have arisen from other causes of sexual excitement, or from menstruation: but this evidently only applies to the false, or imperfect kind; for he afterwards expressly states that he "never found *fully-formed* corpora lutea without previous intercourse."

Meckel, who is often, though incorrectly, supposed to have maintained, or at least favored, the doctrine that true corpora lutea might be formed under other influences than that of impregnation, makes an observation which, if properly understood and appreciated, would have prevented many of the absurdities

which have been promulgated on this subject. "They speak," says he, "of corpora lutea which have been found in new-born infants¹ or very young animals; but the obvious answer to this is, that *every yellow substance* met with in the true ovary is *not a corpus luteum*."²

What, but the most complete mistake on this point, could have induced an annotator on Beck's *Medical Jurisprudence* to hazard the following observation: "A recent case has, in my opinion, completely overthrown the theory, that even strong passions are necessary to the formation of the corpora lutea; the subject was *not above five years old*, and the hymen of course entire; she died of *tubercular disease* in the lungs, yet in her ovaries were *numerous corpora lutea*, as distinct as I ever saw them in the adult impregnated female."³ The only comment necessary to make on this statement is simply to remark, that *one* real corpus luteum, as it is found in the adult impregnated female, is fully as large, or even larger, than the ovary of a child five years old; therefore it is *impossible* that there could, in such a case, be several of them. Madame Boivin notices this case, and makes upon it the following unaccountable observation: "Etait-ce, comme le pensent Meckel et autres, un résultat de la masturbation?"⁴ in a child of five years old: *proh pudor!!*

If, as some would have us believe, highly excited desires, without intercourse, or intercourse without conception, were capable of causing such a change in the Graafian vesicles, and the condition of the ovary, should we not expect to find corpora lutea, almost invariably, in women who have been living with their husbands, or otherwise enjoying, constantly, the natural and perfect excitement of the generative system, without conception? Of the non-occurrence of which consequence I can speak in very decided terms, from numerous opportunities of making examinations under such circumstances.

Haller paid great attention to this subject; in the investigation of which, he tells us that he opened the bodies of upwards of a hundred women; and having continued the investigation through

¹ See Granville's *Illustrations of Abortion*, p. vi., prop. 36.

² *Anatomie Descriptive*, p. 736.

³ Beck, ed. 3d, p. 103. Note, signed *Dunlop*.

⁴ *Maladies de l'Uterus et de ses Annexes*, tom. i. p. 49.

many years, he embodied the results of his observations in two brief, but most important propositions. "Nullus unquam conceptus est absque corpore luteo."¹ "Corpus luteum in virgineis animalibus nullum est; ex conceptione oritur, neque prius paratum adest;" in both instances referring to what has been above described as the true corpus luteum.

The first of these propositions has never been questioned, so far as I know, except in one instance; and the truth of the second appears to me equally incontrovertible.

The exception above alluded to, is an opinion of Mr. Wharton Jones, which I subjoin in his own words: "Though true corpora lutea, there is reason to believe, are formed only after coitus, impregnation may take place without the formation of a corpus luteum. How is this? The explanation which might be offered of such rare cases is this: coitus may have chanced to take place at the very time when a Graafian follicle, having become mature, had spontaneously given way, and expelled the ovum. No congestion, exudation, and extravasation, would in this case take place, but the part would quickly close and cicatrize."² Now, with great respect for Mr. Jones's ability, I must observe that this is only a conjecture of his, as to what he thinks *may* take place in "such rare cases," and I feel bound to add that the explanation offered is altogether unsatisfactory; and I am not aware that any one has ever recorded, from actual observation, an instance in which there was found unequivocal proof of conception, such as an ovum in utero, or a foetus expelled, and no corpus luteum in the ovary; in the numerous examinations which I have made or heard of, I have never met with a single instance of the kind.

The accuracy of Haller's second proposition is fully confirmed by my observations, viz., that the true or perfect corpus luteum is never found in virgin animals; and I have never omitted an opportunity of examination for more than twenty-five years.

In the former edition of this work, I quoted, at some length, the opinions, on this *vexata questio*, of several distinguished anatomists and physiologists who had previously examined and written on this subject; these I now omit, but shall refer to a few who have more recently investigated the question.

¹ Op. Min., vol. ii. p. 458.

² Medical Gazette, 1844.

In 1839, Dr. Lee says: "From all the observations hitherto made upon the true corpus luteum, we may conclude that it is never formed but as a consequence of impregnation."¹

In 1840, Dr. Paterson, of Leith, published a very valuable account of his investigations on the subject of the corpus luteum in the human female, and in several of the lower animals;² from which he came to the conclusion that the perfect corpus luteum is "an undeniable proof of previous or existing pregnancy;" and he has recently informed me that, having ever since paid close attention to this subject, he has seen no reason to change the opinions which he had originally formed.

In 1845, Dr. Renaud, in a paper of singular merit, already referred to (p. 350), announced, as the result of his continued investigations, that "in the human female, the more closely the ovarian functions are viewed, the more conclusive does the verdict seem, that true corpora lutea are never found, except as the products, or sequences of conception."³

Dr. Dalton, who has written with great care, ability, and clearness, an elaborate essay on the corpus luteum, embodying numerous examinations of both kinds of these formations, says that the object of his memoir is "to show, that the corpus luteum of pregnancy is different from the corpus luteum of menstruation; and that it may, under ordinary circumstances, be readily recognized and distinguished from it,"⁴ and that the principal fact which he seeks to establish is "that the presence of a foetus in the uterus induces certain modifications in the growth and progress of the corpus luteum, by which, during a certain period, we can be enabled to decide with certainty that pregnancy has existed."

Professor Bischoff thinks that in the human female, the earliest changes in the Graafian vesicle are the same, at the time of menstruation, whether conception follow or not; but that in the further development of the corpus luteum, the impregnation of the ovum and gestation bring about a material difference; in consequence of which, the corpus luteum attains a fulness of size, color, and

¹ Med.-Chir. Trans., vol. xxii.

² In a paper already referred to. See Edinb. Med. and Surg. Journ., vols. liii., liv.

³ Edinb. Monthly Med. Journ., 1845, p. 600.

⁴ Philadelphia, 1851, p. 18.

texture, which the menstrual corpora lutea never reach: and he expressly states, that in his experiments on rabbits, he never found fully formed corpora lutea without previous coitus.¹

We must now turn our attention to the consideration of those spurious structures, which, although possessing little more than the one character of the true corpus luteum, namely, its color, have been so often regarded as proofs that true corpora lutea might be produced without conception or impregnation: those who so esteem them altogether forgetting that "every yellow substance in the ovary is not a corpus luteum."² We may regard it as a fact universally recognized, that deposits of yellow matter, somewhat resembling the substance of the corpus luteum, are found in various parts of the stroma of the ovary, apart from the Graafian vesicle; and this, too, in females so young, that these deposits could not have been connected with the process of menstruation, as happened in the case already cited (p. 382), where several of them were discovered in the ovaries of a little girl, of five years old; some of these structures are remnants of coagula of blood transformed—others, perhaps, deposits of tubercular matter.

It is also equally familiar to us that these appearances may be observed in obvious relation with the Graafian vesicle; and the history of their production appears to be this: from some accidental or morbid cause, or from the natural physiological stimulus of menstruation, determination takes place towards a vesicle, in consequence of which, it is distended with a sero-albuminous fluid, and either bursts and discharges its contents (in which case there may be found an external cicatrix), or the fluid is again absorbed; but in either case there is often deposited on the internal surface of the vesicle a thin layer of structure, somewhat, though imperfectly, resembling the true corpus luteum in color, but being, in general, not more than one-sixteenth of an inch in thickness, and its substance entirely destitute of bloodvessels; sometimes it is much thinner than this, and amounts to little more than a mere lamina or film of coloring matter lining the

¹ On the Physiology of Menstruation and Conception.—*Brit. and For. Med.-Chir. Rev.*, April, 1854, p. 561.

² Meckel, *supra citat.*

vesicle. In other instances, it is blood which is effused into the cavity of the vesicle, and an exudation of lymph takes place on the inner surface of the vesicle; the more fluid parts of the blood and its coloring matter are gradually absorbed, and there follows a result similar to that above described; in this condition I have often found them, the vesicle being, in some cases, enlarged to three or four times its natural size, filled with blood or other fluid, and its internal surface of a bright yellow color; but when the vesicle collapses, either in consequence of rupture of its coats, or the absorption of the contained fluid, the inner surface of this new deposit closes upon itself, and forms an irregular line of junction, which is generally darker than the rest of the structure; and not unfrequently they present the yellow color only on the circumference, while their centre is so dark as to be almost black; but, from their situation, they are entirely without lining membrane to form either a central cavity, or white stellated line, which, in the true corpus luteum, is formed by the closure of the inner coat of the vesicle; for the same reason also these accidental formations are, in general, much smaller than the others, and they are moreover totally without vessels in their structure; so that, however minutely the rest of the ovary may be pervaded by fine injection, not a particle of it will pass into the bodies thus formed; these peculiarities are exhibited in Plate II., figs. 8 and 9, and especially fig. 10. As in the deposits outside the vesicle, those within it, also, not unfrequently present the characters of tubercular matter.

We must now turn our attention more especially to the corpus luteum of menstruation, the only structure which could, with proper attention, be considered as approaching in its characters to that which accompanies pregnancy; but is yet so different in many important respects, that I do not think any careful observer is likely to mistake the one for the other.

There is now abundant evidence to satisfy us, that at each return of menstruation in women, and of oestrus in the lower animals, a state of greatly exalted action is set up in the ovaries, which is more particularly concentrated on one or more of the Graafian vesicles, in consequence of which, their coats are rendered intensely vascular; they become larger, more prominent, and, in many instances, burst and discharge the ovum; and not

unfrequently, but by no means always, this change is accompanied by the formation within the vesicle, of a peculiar species of corpus luteum, having, as already stated, a certain degree of resemblance to that found in pregnancy.

That this is a time at which the sexual emotions and generative nisus or propensity are more than ordinarily active, does not, I believe, admit of a doubt; and that at this time, or very soon after it, conception is most apt to occur,¹ is, I think, equally proved; it seems, as it were, that this is the time at which nature seeks to conceive, but wanting the indispensable agency of the male, the effort is expended on menstruation; in fact it appears that each menstrual nisus may be regarded as an abortive effort at reproduction, and the elimination of the discharge itself, simply as the necessary disposal of a certain amount of blood, which, had conception taken place, would have been devoted to the support and maturation of the vivified ovum; or, to use the words of Dr. Power,² "a woman menstruates because she does not conceive;" and it has been happily said by Dr. Tyler Smith, that menstruation may be considered as the first act of human parturition; it is, as it were, the parturition of the ovule, while labor is the parturition of the matured ovum; but those who undertake to assert that, under such circumstances, there is not only an ovum discharged, but also a corpus luteum formed at every menstrual period, are, I am persuaded, completely in error, and that the statement of Dr. Ritchie, founded on his examination of the ovaries of women who had menstruated regularly, is correct, when he affirms that menstruation may occur several successive times, without the evolution of an ovum. If corpora lutea were formed at every menstrual period, we could not open the ovary of any healthy young woman in the habit of menstruating regularly without discovering more than one, perhaps several, of these structures, a thing which everybody knows, does not hap-

¹ We are informed by Jourdan, and other French writers, that Fernel acted on the knowledge of this fact, when consulted by Henry II. of France, as to the best means of rendering his Queen, Catharine de Medicis, fruitful; he advised the King to visit her only immediately after the cessation of the menstrual discharge; the adoption of which advice was attended with success, and the Queen, after years of disappointment, gave birth to a son.

² Essays on the Female Economy, &c., p. 8.

pen. That such changes in the ovary do, almost constantly, accompany the periods of heat or œstruation in the lower animals, giving rise to the formation of corpora lutea of considerable size and perfection of structure, is proved by numerous observations, of the accuracy of which we cannot doubt; but with regard to women it is otherwise, and any such assertion can only be made of them with far greater limitations; for in them, owing probably to the less intense excitement of the generative apparatus, the ovum is oftentimes not extruded at the menstrual period, and the corpus luteum may not be produced at all; or if formed, is less substantial; and here I would deprecate a course too often pursued in matters such as we are now considering, namely, that of applying unreservedly to the human female, analogies drawn from facts ascertained in the lower animals.

I would also remark here, that the stimulus of menstruation is not indispensably necessary to the extrusion of ova and their impregnation: this is proved beyond all doubt by those cases where conception has taken place during long periods of complete suppression, or before the establishment of the function, or after its apparent cessation: see Chap. III., in which are related examples of all these exceptional occurrences.

There is not, as far as I know, any direct evidence in Harvey's work on Generation (published in 1651), that he was aware of the periodical maturation and discharge of ova from the ovaries in the human female; but in a very remarkable passage in that work, he institutes a comparison between unimpregnated oviposition and the phenomena of menstruation: after noticing the fact that birds lay unfruitful eggs without the access of the male, he adds: "It is of the same significance in these animals when they conceive eggs, as it is in young women when their uterus grows hot, their menses flow, and their bosoms swell," &c.¹

In 1672, Kerkringius² made an observation which deserves to be noticed, though it is based on so glaring an error as greatly to detract from its value; his words are: "*Fœminæ disjiciunt hæc ova, imprimis tempore menstruorum, vel in iræ vehementia:*" but the ova here referred to were the Graafian vesicles of the

¹ Sydenham Society Edit., p. 189.

² Philos. Trans., 1672.

virgin ovary, which he considered as similar to the eggs laid by birds without intercourse with the cock.

The first decisive observation of a fact bearing directly on this point, appears to have been that of Cruikshank, in 1797,¹ who, when examining the body of a young woman who died while menstruating, found an opening in the ovary, "from whence," says he, "I suspect an ovum escaped, descended through the tube into the uterus, and was washed off by the menstrual blood."

Others made isolated observations bearing more or less on the question; but I think it is only justice to Dr. John Power to ascribe to him the entire credit of having first formally and distinctly promulgated and explained the ovular theory of menstruation. In 1821 he announced his opinion, that at the menstrual periods an ovule reaches maturity in the ovarium, and is under certain circumstances discharged from it during the flow of the catamenia, and that owing to such detachment, a corpus luteum is formed;² the general truth of which opinion subsequent investigation has fully confirmed, and in addition, has defined the true constitution of such corpora lutea and their distinctive characters, when compared with those which result from pregnancy.

It is a curious fact worth noticing here, that while this ovular theory of menstruation is regarded in these countries as of modern origin, it should be recognized in India as an ancient one; and so firmly relied on as true, that it constitutes a reason for the very early marriages which are an established custom among the Hindoos: they say that, inasmuch as, at each menstrual period an ovum or germ is in a state fitted for impregnation, and if not impregnated, is cast off unfruitful and altogether lost, the allowing this wilfully is tantamount to the destruction of the fœtus, or child-murder; and that they are therefore bound to do all in their power to prevent such an occurrence by uniting the sexes, immediately on the first menstruation. "If an unmarried girl," say two of their sages, Atri and Kasyapa, "discharges the menstrual fluid at her father's house, the father incurs a guilt similar to that

¹ Philos. Trans., 1797.

² Essays on the Female Economy, pp. 24, 25.

of destroying a foetus, and the daughter becomes *Brisalee*, or degraded in rank."¹

Facts abundantly prove what indeed we would anticipate, that a corpus luteum formed under and connected only with the transient stimulus of menstruation, and one which results from fruitful intercourse and conception, and which is sustained by the vigorous and continued action of healthy pregnancy, inasmuch as they owe their formation to actions, and are connected with conditions essentially different as regards their ultimate object, whatever identity there may be in both cases, in the processes by which the ovum is eliminated from the ovary, present very different characters and run very different courses. In menstruation the increased vascular action, and exalted vitality affecting the uterine system, subside after a few days; the ovum which may have been discharged perishes, and along with its removal and the restored quiescence of the whole uterine system, the imperfect corpus luteum undergoes proportionately rapid changes of retrogressive metamorphosis: it forms only a peripheral layer, arrives quickly at its maximum of development, and then, having no further object to accomplish, and the increased vascular supply to the ovary being withdrawn, it begins at once to diminish in size and speedily loses whatever it may have possessed of the characters of the true structure; shows signs of decay, shrivels up, alters its form, so that instead of appearing round or ovoid, it becomes flattened or collapsed into a figure not unfrequently presenting angles, and after the lapse of two or three months is found as a more or less distinct spot changing from yellow to brown or black, and leaving but an evanescent scar: but in the case of conception and healthy pregnancy, it is far otherwise; the formation of the corpus luteum is only one early link in a long chain of consecutive vital actions which are to be sustained in perfection, and in great activity for many months, with the grand special object of maturing the child; during which time the whole uterine apparatus is kept in a state of exalted vitality, and greatly augmented vascular supply, in which the ovary and the new structure of the corpus luteum fully participate, and hence, the latter, instead of

¹ Vide a paper by Baboo M. Gupta, *Dublin Journal of Medicine*, vol. xxviii., p. 272; and Professor Webb's *Observations in Robertson's Essays*, &c., p. 119.

shrinking and fading to decay, like the corpus luteum of menstruation, maintains its vascularity and vital activity, continues to increase and develop itself during at least the first half of the period of gestation, and attains a richness of color, a perfection of texture, and a fulness of size, which the temporary structures never exhibit; and not until gestation is nearly completed and the vital actions of pregnancy almost at an end, does the corpus luteum of conception begin decidedly to lose its hitherto existing peculiar characters of size, form, color, texture, and vascularity; and even after gestation is terminated and its great object accomplished, the corpus luteum diminishes slowly, and does not, as we have already seen (page 366, *et seq.*), disappear for some months.¹

Facts prove incontestably, that it is the condition of the whole uterine system in pregnancy, which gives to the corpus luteum its peculiar and distinctive characters, and not the particular changed condition of the ovum itself. Of this we have a striking illustration in those cases, in which more than one ovum is impregnated, but only one proceeds to maturity; in which case, it has been found that the corpus luteum of the blighted and perished ovum is developed and maintained in a state of perfection; some instances of which, observed by myself, I have already given (p. 372), and referred to a case related by Dr. Dalton, in which two ova were impregnated; one was blighted at an early period, and the other developed up to seven months, when the woman died, and there were found in the left ovary two perfect

¹ "At the same time we must distinguish *two kinds of corpora lutea*; those which result from the cicatrization of a follicle after the spontaneous expulsion of an ovum, without any subsequent conception; and those which are produced by the same processes after the expulsion of an ovum, followed by conception, and especially by gestation. Those belonging to the first class rapidly pass through their different stages, never attain a high degree of development, are much inferior to the others in size, rapidly assume the yellow coloration, fade again in a few days, and in the course of one or two months become retracted and completely concealed in the ovarian tissue. The second species of corpora lutea participating in the congestion and functional activity, which are established in all the sexual organs during gestation, attain a size sometimes greater than that of the ovary itself, and pass so slowly through the different stages of their development and atrophy, that they are still perceptible at the termination of pregnancy; they gradually diminish in size in proportion to the growth of the fœtus and the approach of the end of gestation."—*Longet's Physiology*, Paris, 1850, tom. ii. p. 88.

corpora lutea of equal development:¹ and a similar case by Dr. Renaud is there related.

On the whole, then, we find the corpora lutea which arise from accidental causes, to differ from those which result from impregnation in several particulars.

1. There is in general, very little or no prominence, or enlargement of the ovary over them; this may exist, to a certain degree, in the case of those connected with menstruation, if the examination happen to be made either before the rupture of the vesicle, or soon after; whereas in the corpus luteum of pregnancy, the external prominence is visible throughout the whole, or at least the greater part of gestation, and gives a much more solid and resistant feel to the finger, than that of menstruation, which is soft and yielding, while that of pregnancy feels firm and well defined.

2. The external cicatrix is frequently altogether absent: where the corpus luteum is that of a recent menstruation the cicatrix *may be* present, and even well marked, but we constantly meet with yellow bodies in the ovaries without any appearance of a cicatrix having ever existed over them; which is not the case with the true corpus luteum of pregnancy.

3. There are often several of them, more or less alike, but in different stages of development or decline, found in one or both ovaries, especially in subjects who have died of scrofulous disease, such as phthisis; in which case they appear to be merely depositions of tubercle, and are frequently without any discoverable connection with the Graafian vesicles;² it is of course true, that in a case of multiple gestation, there may be found more than one true corpus luteum in the ovary, but in such cases, they are of the same date, and degree of development, or very nearly so; whereas, so many as six or eight corpora lutea of the spurious kind, and of very different sizes and appearance, have been seen together in the same ovary. See Pl. II., fig. 8.

4. The spurious productions differ from those of pregnancy in size, color, and the thickness of their peripheral wall: they are smaller, their color is not the rich full shade of buff, so happily described by Haller as "*ex flavo rubens*," and by Rœderer as

¹ Op. jam cit., case xiv., pp. 60, 62.

² Of which the case already alluded to, p. 382, as related by Dr. Dunlop, is a well-marked instance.

"e rubella flava," but a thin-bodied, sickly, bright yellow, or canary color: their wall is seldom more than a line in thickness, often not so much: their color remains unchanged, or even grows more pronounced, when their substance has already undergone considerable atrophy; whereas the reverse obtains in the corpus luteum of pregnancy, in which the color begins to fade, even while the development of the yellow substance is progressing.

5. They present no trace whatever of bloodvessels in their substance; of which they are, in fact, entirely destitute, and consequently cannot be injected; while those of pregnancy can, most brilliantly. This has been denied, but there is not the smallest doubt about it; I have repeatedly made their substance bright crimson with fine injection; while not a particle could be forced into the spurious productions.

6. Their texture is sometimes so infirm, that it seems to be merely the altered remains of a coagulum; and at other times it appears fibro-cellular, like that of the internal structure of the ovary itself; in some instances, they are mere depositions of scrofulous or tubercular matter; but their substance never presents the soft, rich, lobulated, and regularly glandular appearance which Hunter meant to express, when he described them as "tender and friable like glandular flesh."

7. The corpus luteum of menstruation, within one or two months, passes rapidly into a state of atrophy and decay: whereas, that of pregnancy continues to be developed and to acquire greater firmness, and more perfect organization, during more than the first half of the period of gestation.

8. They are formed within the cavity of the Graafian vesicle, and consequently never present either the central cavity lined with a distinct membrane, as does the corpus luteum of pregnancy, or the radiated or stelliform white line which results from its closure.

9. In form, they are often triangular, or square, or of some figure bounded by straight lines; whereas, the corpus luteum of pregnancy, at whatever period of gestation it may be examined, is always more or less of a rounded or oval outline.

Certain microscopical differences in the minute structure of the two kinds of corpora lutea have been pointed out as distinguishing the false bodies from the true; this mode of diagnosis, I

regret I cannot attempt to give from my own observation, not being sufficiently skilled in investigations of the kind; and having carefully considered the published statements of others on the subject, I do not think that the microscopical distinction has been made out with sufficient accuracy to warrant our adopting it as a satisfactory guide.

There is a change described by some as taking place in the form of the Fallopian tube, in consequence of impregnation; which, although my own observation leads me to consider its occurrence as very doubtful, and at most only accidental, or occasional, deserves to be noticed, as it has been regarded as a mark of value by some very high authorities, among whom I

Fig. 22.



may mention the late Dr. Hamilton of Edinburgh, who considered it peculiar to pregnancy. The change alluded to consists in the formation of a sacculus, or dilated pouch at about an inch from the fimbriated extremity of the tube, as in the annexed figure taken from Rœderer, tab. iv., lit. 1, who applies to it the term *antrum tubæ*; and hazards the very improbable conjecture that it may, perhaps, arise from some of the fluid which escapes from the Graafian vesicle into the tube, delaying near the fimbriated end, and dilating it.¹ A perusal of what Rœderer says on the subject would, I think, lead to the conclusion that he himself thought the matter very doubtful evidence, for he expressly asks, "An ex factâ conceptione, ista antra nascuntur?" having previously mentioned two cases of women dying about the time of delivery, in whose tubes the sacculi did not exist.² Among fourteen gravid uteri which I examined expressly for the pur-

¹ *Icones Uteri Hum. Grav.*, p. 14, note 6.

² *Vide loc. supra cit.*

pose, I found this change existing in only one, while on the other hand, I have frequently seen it in the tubes of uteri in the unimpregnated condition.

I feel bound to state that I am not competent to offer, on this point, anything like a decided, or satisfactory opinion, not having fully tested its value by a reference to a sufficient number of facts; I shall, therefore, for the present, only say, with Rœderer, "*ulteriori indagine, ista antra non indigna esse, mihi videntur;*" an observation which might, perhaps, with equal propriety, be extended to many of the subjects which I have endeavored to elucidate in the preceding pages.

11

12

ON THE
PERIOD OF HUMAN GESTATION.



ON THE

PERIOD OF HUMAN GESTATION.

"Sui juris rerum natura est, nec ad leges humanas componitur, modò properat, modò vota præcurrit, modò lenta est, et demoratur."—SENECA.

WHETHER we regard the question of the period of human gestation in reference to the determination of its natural, or ordinary limits, or turn our attention to the still more debated question of its protraction, we find, connected with the investigation, a multitude of considerations of deep and varied interest; when viewed, on the one hand, as subjects of physiological inquiry, and, on the other, of paramount importance, as connected with the due administration of law and justice; and involving, moreover, some of the most delicate investigations which affect our social relations, and our professional duties. It is sufficient only to remember that the purity of virtue, the honor and peace of domestic life, legitimacy, and the succession to rank, titles, and property, not unfrequently depend solely for their invalidation, or establishment, on the settlement of this question; while the fact to be established is, unfortunately, one which does not always admit of being tested by any fixed criterion either in law or physiology, but, on every new occasion of doubt or difficulty, depends for its elucidation on the contradictory evidence of witnesses, and the opinion that may, in the particular instance discussed, be formed by judges or committees, of the connection between facts stated and admitted, and their relations with other circumstances, in general not admitting of any certain or satisfactory method of proof; and independently of these less ordinary occasions, the daily routine of professional life is constantly bringing before us for solution, a number of questions of con-

siderable difficulty, and often of no less delicacy, on which we are required to give opinions, which are to guide or influence others in matters of the deepest interest and importance to their welfare.

In the laws of this country which bear upon the question of legitimacy, and the period of human gestation, there is frequent reference to "the usual period of gestation," "the course of nature," "the laws of nature," &c., a conformity to which, in the birth of any individual whose legitimacy may happen to be questioned, constitutes one of the requisites essentially necessary to satisfy the law; which, however, does not more strictly define the *legitimum tempus pariendi* than by declaring it to be, *usually*, nine calendar months, or forty weeks;¹ and Blackstone says: "From what has been said, it appears that all children born before matrimony are bastards by our law; and so it is of all children born so long after the death of the husband, that by the *usual course of gestation* they could not be begotten by him. But this being a matter of some uncertainty, the law is not exact as to a few days."² Hence, the legitimacy and civil rights of children born within that period are, as far as the time of gestation is concerned, acknowledged in law.³

Farther than this, neither our laws, nor those of America, fix any precise limit; but, whenever a question is brought before the judges, involving the determination of the usual period of gestation in women, and the variations to which it may be liable, the matter is made, on every new occasion of the kind, a subject of discussion, to be decided by the evidence of witnesses examined at the time; and the facts proposed to be investigated, in reference to such questions, generally are: I. The natural period of gestation in women; II. Premature births as affecting the viability of children; III. The possibility of protracted gestation: each of which I shall now proceed to consider; premising that by the period of gestation, we are to understand the interval

¹ "Quod tempus est usitatum mulieribus pariendi."—*Lord Hale, in note in Coke on Littleton*, fol. 8.

² *Commentaries*, vol. i. p. 456.

³ According to Britton des Gardes, the old English code specified forty weeks as the limit of legitimacy.

between impregnation, or the fruitful intercourse which produces it, and the commencement of parturition.

I. *Natural Period of Gestation in Women.*—With regard to this point, it must be confessed that our knowledge is by no means either so extensive or precise as might be, at first sight, expected in a matter apparently capable of being made the subject of daily observation; but the fact is, that we are very rarely able to ascertain, with anything like certainty, the exact time of conception; and, consequently, having in general, only one end of the chain, we can have no certain mode of counting the number of links of which it consists; and it is to be feared that it can hardly be otherwise until we meet in society more numerous imitators of Zenobia, the beautiful Queen of Palmyra, who, if we are to credit Trebellius Pollio, “never admitted her husband’s embraces, but for the sake of issue; if her hopes were baffled, in the ensuing month she reiterated the experiment:” but in the existing rarity of such instances of self-command, we are obliged to acknowledge, with regret, that, “as it is difficult to conceal the termination of pregnancy, so is it equally difficult to ascertain its commencement.”

Still, however, I think we are in possession of facts sufficient to warrant our belief, that the natural period of gestation is forty weeks, or 280 days, which is also the period acknowledged in law.¹ A good deal of confusion on this point seems to have arisen, from considering forty weeks, and *nine calendar months*, as one and the same quantity of time, whereas, in fact they differ by from five to eight days. Nine calendar months make 275 days, or if February be included, only 272 or 273 days; that is, thirty-nine weeks only, instead of forty. Yet, we constantly find in books on law, and on medical jurisprudence, the expression, “nine months, or forty weeks;”² and in a remarkable case,³ tried in Scotland in 1837, this error was committed by some of the

¹ See Coke upon Littleton, 123, b.

² Vide Coke upon Litt., *loc. cit.*, and Paris and Fonblanque, vol. i. p. 241. Smith’s Principles of Forensic Medicine, p. 491. Dewees’ Compendium of Midwifery, p. 164. Mr. Burns more accurately says, “nine calendar months and a week:” Principles of Midwifery, p. 168.

³ The Parishioners of Kinghorn against the Rev. Fergus Jardine, to which trial I must refer more particularly hereafter.

medical witnesses. Another source of confusion has evidently had its origin in the indiscriminate use of lunar and solar months, as the basis of computation, in certain writings of authority. This appears to have occurred in the Roman laws on this very subject. For although the Romans, after the reformation of the calendar by Julius Cæsar, generally made use of the divisions of the solar year, it is quite plain that in their calculations of the period of gestation, which they fixed at ten months, they referred to lunar months, as appears quite distinctly from the following passage in Ovid:—

"Luna novum decies implebat cornibus orbem,
Quæ fuerat virgo credita, mater erat."—*Fasti*, lib. v.

And in another place:—

"Seu quia bis quino fœmina mense parit."

And again:—

"Jamque decem menses, et puer ortus erat."

And several others of the most distinguished of their writers allude to ten such months as the acknowledged period of gestation. Virgil says:—

"Matri longa decem tulerunt fastidia menses."—*Ecl.* iv., 61.

Plautus:—

"tum illa quam compresserat,
Decimo post mense exacto, hic peperit filiam."

Terence:—

"virgo ex eo
Compressu gravis facta est; mensis hic
Decimus est."—*Adelphi*, III., iv., 29.

Cæcilius:—

"Insoletæ mulier decimo mense parere?
Pol nono, etiam septimo, atque octavo."

I may just remark here, that these are all lunar months; the word *mensis* used by those writers being elsewhere declared to be equivalent to *lunæ cursus*,¹ and is obviously derived from the Greek *μήνη*, the moon.

¹ *Lunæ cursus*, qui, quia mensa spatia conficiunt, menses nominantur."—*Cicero*, *N. D.*, ii. 27.

Hippocrates, on whose authority the Roman laws were founded, states distinctly, that ten months is the period of human gestation; these must be lunar months, as he expressly says they amount to seven quarantains, or, in other words, forty weeks, or 280 days; which amount of days he speaks of in several other places as the period of mature gestation; but, on one or two occasions reckons them as consisting of nine months and ten days; but it is plain, from the context, that he here refers to months of thirty days each, for immediately before, in speaking of a seven months' child, he says, it has "completed three decades of weeks, or 210 days;" so that each such month must contain thirty days.

We find in the book of Esdras,¹ "nine months" spoken of as the fixed time of gestation; as it is also in Maccabees;² while in the Wisdom of Solomon,³ "ten months" is the period assigned for the perfection of the child in the womb; a discrepancy which could only have arisen from the writers using different divisions of time.

Herodotus, who wrote about the same time with Esdras, viz., 450 years before Christ, speaking of Ariston, King of Sparta, says,* that having married two wives without having children, he took a third; who, says the historian, "in too short a time, and before she had completed her ten months, bore Demaratus;" in consequence of which, Ariston publicly declared the child could not be his, though he was subsequently fully persuaded that he was his son; and the mother, when afterwards solemnly adjured by her son to disclose to him the whole truth, assured him that Ariston "had thrown out these words through ignorance of such matters, for women bring forth at nine months, and seven, and all do not complete ten months." It appears plainly from these passages, that at the time Herodotus wrote, ten months, or 280 days, were considered the usual period of human gestation.

Independently of the very few cases in which we have satisfactory evidence of conception following casual intercourse, or

¹ 2 Esdras, iv. 40, viii. 8, xvi. 38.

² 2 Maccabees, vii. 27.

³ vii. 2.

⁴ Book vi., ch. 61, *et seq.*, Cary's Translation, pp. 376, 380.

perhaps a single coitus, we have no certain means of knowing exactly the commencement of gestation, and are obliged to form our calculation on one or other of three very fallacious grounds: 1st, on some peculiar sensations experienced by the female at some particular time; 2d, from the cessation of the menstrual discharge; or, 3d, from the time of quickening; on each of which doubtful modes of reckoning I shall offer a few brief observations.

1. *Peculiar Sensations.*—It was long a popular belief, that women were conscious of the act of conceiving, and the laws of filiation were founded on such an assumption; but such a doctrine is no longer admitted; and that the great majority of women conceive, without any peculiar sensation which would induce them even to suspect such a consequence, is a fact too well known to require to be further insisted on; especially when we know, that conception has followed intercourse during states of insensibility (see p. 294 *et seq.*); but, on the other hand, I believe it to be perfectly established, that, occasionally, such sensations are experienced, either at the moment, or very soon after: of this I have already noticed more than one instance in former chapters;¹ and very lately I met with a very striking example of the same kind, which seemed almost to realize the lines of Quillac:—

“Ubi conceptus certissima signa recentis
Elucent, ut qui dulcis genitalia tentat
Horror, et admissum semen testata voluptas,
Osque uteri penitus clausum.”

I subjoin, also, a very decisive instance, furnished to me by my friend Dr. Ireland, who permits me to transcribe his account of the case.

“I attended, last month, a lady whose husband was called out of this country, rather suddenly, on the 5th of April; in about three months after, she had a severe diarrhoea, and dreaded abortion, for which I was consulted; she recovered without aborting, and sent for me, in some time after, to inform me that she should require my attendance on the 10th of January. I was astonished at her precision, and mentioned the impossibility of reckoning so exactly; her answer, which I will not soon forget, was, that

¹ See pp. 86, 206, note.

her sensations the day her husband went to England, left her no room to doubt her becoming pregnant at that time; she accordingly sent for me on the 10th of January, the membranes having spontaneously ruptured that morning, and though she was not delivered till the next day, yet her pains never left her from that time until she was well, which was on the 281st day from her husband's departure, the labor having commenced on the 280th day: her husband, who arrived some weeks before she was confined, assured me, this regularity as to time also occurred to her in a former confinement."

The following case occurred in my own practice. A patient of mine, who had been residing out of town for the benefit of her health during the summer, returned to her husband in the last week of October, a few days before the expected return of the menses, which appeared at the proper time (November 3d); but at the next period, 1st December, they were suppressed, and on the 10th she requested to see me, when she told me, *significantly*, that she knew she was in the family way from the time of her return home, notwithstanding the menstrual appearance in November; and she added, "remember, I tell you now, that my confinement will take place on the 4th of August." On the 3d of August she had slight pains, which subsided; but returned again on the 4th, and again abated till the 5th, on which day she was safely delivered, after a labor of about three-quarters of an hour. This lady told me, at the time of my visit to her in December, that the reason of her wishing to see me so early in her pregnancy was, that she had been told by a medical man that, from her state of health, she would certainly lose her life if ever she became pregnant again: this cruel and silly intimation was, however, most happily belied, and the lady has since safely given birth to several children.

I should add, here, another objection to placing much reliance on these peculiar sensations, namely, that I have met with instances where they were strongly felt and relied on, and in which it turned out that pregnancy did not exist.

2. *Cessation of the Catamenia.*—Calculations based exclusively on the cessation of the catamenia must, necessarily, be defective in affording us anything like precise information as to the exact period of human gestation, or of the age of the premature foetus,

in disputed cases: first, because conception may occur at any time between the termination of one menstrual appearance and the time of its expected return, or, perhaps, even during the time of the discharge, as occurred in a case related by Mauriceau,¹ and in which he remarks that delivery took place at the end of nine months and three days. Secondly, there may be one, or most monthly appearances after conception, as I have repeatedly known to happen; see p. 82, *et seq.*, and case just related. Thirdly, women not unfrequently conceive during a suppression of several months' duration. I have at least three patients whose habit it is to have menstruation suppressed, without any morbid course, for one or two periods before they conceive; and Zacchias makes a similar statement. My own observations lead me to the conclusion that conception occurs, in the great majority of instances, within a few days after the menstrual discharge; and we have already (p. 387, note) seen that Fernel² availed himself of the knowledge of this fact, when consulted by Henry II. of France as to the best means of rendering fruitful his queen, Catharine de Medicis. In some cases, and these by no means few, conception occurs immediately before the expected return of the menses, so that, of two women who may have menstruated on the same day, and conceived before the next return, one may complete her full term of gestation three, or even three and a half weeks before the other.

Dr. Tyler Smith, in his very ingenious and clever book,³ after stating, quite correctly, that the duration of human pregnancy is a multiple of a catamenial period (that is 280 days), goes on to argue that parturition occurs at what would otherwise be a menstrual period; and that, in fact, it is itself essentially a menstrual period; and he quotes Harvey in support, partially at least, of his position; the words of this illustrious man are these: "Unquestionably, the ordinary term of utero-gestation is that which we believe was kept in the womb of his mother, by our Saviour Christ, of men the most perfect; counting, viz., from the festival of the Annunciation, in the month of March, to the day of the

¹ *Maladies des Femmes Grosses*, tom. ii., obs. 676, p. 552.

² See *Dict. des Sci. Méd.*, tom. xxxii. pp. 391, 392, and *Dictionnaire Historique*, art. "Fernel."

³ *On Parturition and Obstetrics*, pp. 115, *et seq.*

blessed Nativity, which we celebrate in December." This is a period of 275 days only; he then goes on to state what does not appear to have any very obvious connection with the fact referred to, but is, indeed, rather at variance with it.

"Prudent matrons," he says, "calculating after this rule, as long as they note the day of the month in which the catamenia usually appear, are rarely out of their reckoning; but, after ten lunar months have elapsed, fall in labor, and reap the fruit of their womb the very day on which the catamenia would have appeared, had impregnation not taken place."¹

Now, with all possible deference and respect for such authority, I must say, that after giving my best consideration to the above statements, I cannot assent to them; my experience having convinced me that they are opposed to fact. It is, I think, universally admitted, that a woman may conceive on any day of the interval between one menstruation and another; and if the term of gestation be a multiple of a menstrual period, or whatever number of days it may consist of, the duration of pregnancy must be reckoned from the time of conception; which may occur on any of the twenty-two or twenty-three clear days intervening between the termination of one catamenial period, and the commencement of the next; consequently, the last of the 280 days, or other number, must fall as much after the day of the tenth menstrual return as the day of conception was after that of the preceding menstruation; and it is to be remembered, that Harvey himself states, in another place,² that "women are most prone to conceive either just before, or just subsequent to the menstrual flux;" so that really his opinion is not tenable, even on his own showing. Again, if the time of labor were on the very day of the tenth menstrual return, then, as already remarked, all women who had menstruated on the same day, and afterwards conceived, should also fall in labor on the same day, which most assuredly is not so.

Now let us suppose, as we may most reasonably, that in some other instance, as in the case referred to by Harvey, conception took place on the 25th of March, and that menstruation had oc-

¹ Works, Syd. Soc. Ed., p. 529.

² Op. jam cit., p. 544.

curred two weeks before, viz., on the 11th; then the tenth menstrual return would fall on the 16th of December, while 280 days of gestation would not run out till the 30th of that month; but, relinquishing hypothesis, let us appeal to an absolute fact, for the accuracy of which I can vouch. Mrs. A., whose case I shall presently relate (see p. 409), menstruated on the 18th of October, 1851, when away from her husband, whom she saw but once, namely, on the night of the 10th of November, when she conceived, and was delivered on the 17th of August, 1852. Now here, if parturition had occurred "at what would otherwise be a menstrual period," it should have taken place on the 24th of July, which was the tenth menstrual period, or, to use Harvey's own words, "the very day on which the catamenia would have appeared, had impregnation not taken place."

3. *Time of Quickening*.—With regard to the time of quickening, the observations already made, Chap. V., especially pp. 128, *et seq.*, abundantly prove that no reliance can be placed on it as a satisfactory means of calculating the period of gestation; for although, in a few instances, it has been observed to take place constantly at a particular period of gestation, in the vast majority of cases the time of its occurrence is liable to infinite variety, and is quite uncertain in different gestations, even of the same individual. I may, however, just observe, that in several of the cases in which gestation was supposed to be protracted much beyond the ordinary limits, it had also been remarked that quickening had taken place at some unusually late period, as at six or seven months. Thus, in two cases related by Dr. Reid, in which delivery did not take place until twelve months after the suppression of the catamenia, quickening was not experienced until the seventh month;¹ the explanation obviously being, that in each instance, pregnancy did not commence until the catamenia had been already three months absent.

Now, as to those cases in which the day of fruitful intercourse could be exactly known, or very nearly so, in proportion as they only are valuable for our purpose, so is the difficulty great of obtaining them. Married life is not likely to furnish many such, and those who prove pregnant *par amours*, are but too likely to

¹ Lancet, 1850, vol. ii. pp. 80, 81.

assert whatever they think will best suit their purpose, or make their case appear to the best advantage; however, I am able to bring forward not a few, on which I think reliance may be placed; at the present moment, I shall only produce those in which the natural period was, as nearly as possible, observed; hereafter, when treating of protraction of the period, I shall detail some others, in which, under similar circumstances, the duration of pregnancy was extended beyond the ordinary limits; and at the end of this paper I shall classify and throw into a tabular form, all the cases, deserving of reliance, which I have been able to collect, either from my own observation, or from that of others.

On the 14th of May, 1830, my attendance was requested by a patient, whom I found just delivered of a fine healthy boy: she informed me that she had been married on the 6th of the previous August; two days after which, her husband had been obliged to leave Dublin, and did not return for some months; the interval here, between conception and the time of delivery, must have been from 279 to 281 days; conception might, of course, have occurred on either of the three days, and if we assume that it happened on the middle day of the three, viz., the 7th of August, the gestation was one of exactly 280 days.

The next case was one invested with much more than the ordinary degree of interest and anxiety, for reasons which will readily appear. A lady, who had been for some time under my care, in consequence of irritable uterus, went to the sea-side, at a considerable distance from Dublin, in the month of June; leaving her husband in town, a temporary separation being considered essential to the recovery of her health. They did not meet until the 10th of November, on which day he went down to see her; and, being engaged in a public office, he was obliged to return to town next day, and they did not meet again for more than three months. The result of this visit was conception: before the end of the month she began to experience some of the symptoms of pregnancy; and when she came to town, on the 22d of February, she looked large with child, and had quickened on the 28th of the month preceding. Her last menstruation had occurred on the 18th of October. She went on well through her pregnancy; and the writer was called on to attend her in

labor, on the 17th of August: when she gave birth to a healthy child, after a labor of a few hours' duration. Here the gestation exceeded nine calendar months by just one week, making exactly 280 days from the time of conception. It may be observed that this was the earliest instance of quickening which had then presented itself to the writer, occurring, as it did, before the completion of the twelfth week. See p. 129.

I may now mention, that this lady's husband was old enough to be her father; and when she returned from the country, declaring herself with child, and looking large, he became furious, accused her of infidelity, and rushed off to me to detail his grievances, and charged me with being accessory to his misfortune, by sending his wife away from him. I explained to him the unreasonableness of his doubts and suspicions, but all in vain; and, at length, he wound up a paroxysm of great excitement with this question: "Well, sir, if this child is mine, when will it be born? when will my wife be delivered, sir?" To which I replied, with no little anxiety, I confess, considering the lady's size, and the early date of the quickening, "About the middle of August; but you will, of course, understand that she might not go her full time." "Oh!" said he, sneeringly, "I thought as much; I guessed there would be a loophole of escape;" and so we parted. Most fortunately, the lady remained well until the 16th of August, on the evening of which day she began to complain a little, and was, as already stated, delivered next day, to the inexpressible joy of the hitherto doubting father, who now declared himself not only satisfied, but the happiest man alive.

In December, 1850, I saw, in consultation with Dr. James Duncan, a young unmarried lady, whom it was my painful duty to inform, that she was about six months pregnant: she had last menstruated at the end of May; and, in reply to a question, as to whether she could remember when the intimacy began which had caused her misfortune, she burst into tears, and exclaimed, "Oh, can I ever forget it! it was on the 10th of June;" and she also assured me that she had never seen the person after that day. I had, afterwards, unquestionable evidence that such was the fact. After seeing this young lady, I said to Dr. Duncan, "Now, we shall see whether she has told the truth; for if she

has, she will be confined about the middle of March." Her labor occurred on the 16th of March, when she gave birth to a full-grown child.

In the autumn of 1854, I was engaged to attend a lady in her third confinement, which, I was informed, was expected to take place on the 25th of September: and, on inquiring of her husband why this particular day was fixed on, he told me that owing to the state of his health, no intercourse had taken place for some months previous to the 25th of December, 1853; on the night of which day it did occur, and not again until after the middle of January, when the catamenia were expected, but did not appear. She went on favorably, and was delivered, on the 30th of September, of a full-grown healthy child.

In addition to the above, and that already related, p. 404, on the authority of Dr. Ireland, the following was communicated by a medical friend, on whose accuracy I place the most perfect reliance. The husband of a lady left home on the 8th of October, and did not return for six weeks; within a month, she had occasion to consult my informant, as she was beginning to suffer some of the *désagrémens* of early pregnancy, and stated her belief that she was pregnant from the day of her husband's departure: she was delivered on the 14th of July following, making exactly 280 days, it being a leap-year.

Dr. Merriman, whose testimony on any matter within his observation is entitled to great respect, says: "I have likewise been made acquainted with several instances of single intercourse, and have found that the 280 days have not been exceeded;"¹ but he afterwards mentions two cases of protraction, one to 283 days, and the other to 286.

It has been suggested, that pregnancy should be dated, not from the single fruitful intercourse, or insemination, which has produced it, but from the time when the ovum comes into contact with the semen masculinum, which union should be considered as constituting conception. Now this may be true; but supposing it so, how are we to make it available in practice? Is not our attempting to do so, more likely to engender confusion than to lead to satisfactory results? The interval between fruit-

¹ Synopsis, &c., 5th ed., p. xxxi.

ful intercourse, and the actual vivification of the ovum by the semen, if there really be any such interval, is uncertain, and probably never can be known with accuracy. In some instances, if not in all, I think there is reason to believe that insemination and conception are absolutely coincident, and happen almost at the same instant, the ovum meeting the semen and spermatozoa at the moment of their admission, as in such a case as I have already related p. 73, where symptoms of pregnancy were experienced the day after marriage, and the time of labor corresponded: some estimate the interval at five days, and some at ten, or twelve; and so, in fact, we must regard this as an unknown quantity, varying from five to twelve days, which is to be subtracted from the whole number of days absolutely intervening between insemination and parturition: moreover, I think it reasonable to believe that from the moment of fruitful intercourse, there is commenced, whether within or without the ovary, a new action, which is the first step towards the infusion of vitality into the germ which is to be evolved: (see p. 343 *et seq.*) "The virtue," says Harvey,¹ "which proceeds from the male in coitu has such prodigious power of fecundation, that the whole woman, both in mind and body, undergoes a change;" and although some greater change may be effected when the ovum comes into more perfect contact with the spermatozoa of the male, still I am persuaded, that this earlier or inceptive stage of vivification is as much a part of pregnancy, as any other portion of its progress. Does it not seem anomalous to suppose such a case as this?—on the 10th of November a woman has intercourse with her husband, which the event proves to be fruitful, and not again for several months, and she is delivered on the 17th of August, *i. e.* 280 days after the date of the single intercourse: now, according to the theory, or mode of calculating above referred to, this woman should be considered as not pregnant on the 11th of November, but as being so some days after, although no further intercourse took place for some months, and the term of her gestation should be reduced to 275 days, or 270, or even to 268: in fact, if this view were adopted, we should have no means of calculating the period of gestation, with anything like an approximation to accuracy, in any case.

¹ Works, *ut antea*, p. 576.

II. *Premature Births*.—The premature birth of children not unfrequently gives rise to discussions of a very delicate and important nature; involving, on the one hand, the legitimacy of the child, and, on the other, the honor and fair fame of the mother, and, consequently, the happiness of families; when suspicions are entertained that the development of the foetus does not correspond to the period which ought to have been that of gestation, dating from the time of marriage, the departure, or return of the husband, and so forth. It is, therefore, essentially necessary, that all who are likely to be consulted on such matters, should possess themselves with as accurate a knowledge as possible of the progressive development of the embryo, and the marks, or characters, which belong to each successive period of intra-uterine existence, even in the earlier months.

A full detail of the successive advances in foetal development would, in the writer's opinion, be superfluous and misplaced here; and, to be satisfactory, would require a very lengthened account, which the reader will readily find elsewhere;¹ but it appears very important to remember, that from the results of accident or the existence of disease in some of the structures of the ovum, especially in the placenta, the size and external characters of the foetus may not at all correspond to the real period of gestation; for this very obvious reason, that in consequence of the diseased condition of the medium of support, an insufficient, and at the same time, unhealthy nutrition is afforded to the child, by which its growth and natural development are retarded, so that at a given period, it will be found to present appearances properly belonging to a much earlier period of intra-uterine life. Thus, in a case already mentioned, p. 80, the woman, who had been for two entire years previously laboring under disease of the heart, and with the catamenia suppressed all that time, had not cohabited with her husband for six months, when she miscarried of a foetus presenting characters belonging to the fifth month; but on examination, more than half the placenta was found in that state of

¹ See Sœmmering's *Icones Embryonum Humanorum*; Velpeau, *Embryologie*; and *Traité des Accouchemens*, tom. i. p. 320; Pockels; Beck's *Medical Jurisprudence*, 5th ed., p. 178, where there is a very full summary of the accounts given by different authors; but the best account of the development of the foetus, known to the writer, is that by Devergie, *Méd. Légale*, tom. i. p. 495, *et seq.*

consolidation called the tubercular disease of that organ; and the umbilical extremity of the cord just at its junction with the abdomen, was twisted to such a degree, that it looked as if it had been tied tightly round with a thread; being there reduced to one-tenth of the diameter of the rest of it. The same circumstance was observed in a case which occurred to Dr. Ireland, who very kindly sent me the foetus and placenta for examination; in this instance, the lady was more than six months pregnant, when she miscarried of a foetus corresponding to about four months and a half; the placenta being in a state of disease similar to that just noticed. Several specimens of such occurrences are preserved in my museum; in one, the ovum of five months contains a foetus not larger than it ought to be at two months and a half, and another ovum of the same age is accompanied by a foetus of apparently six weeks' development (see pp. 311, *et seq.*); where several cases are related in illustration of this point.

Duparcque¹ gives the particulars of a case, in which a lady sustained a severe shock, by being thrown down violently in the sixth month of pregnancy; she, however, went her full time, and the child was born alive, but was hardly more developed than a foetus of six months: in this case, also, the placenta was found altered in structure, being compact and atrophied; an instance of that amount of lesion in the organ which is sufficient to impair and retard the development of the child, but yet to allow of life being continued.

I have already suggested (p. 313, *et seq.*), as a salutary caution arising from occurrences of the kind just related, that before we venture to pronounce an opinion on the age of a child which presents characters of less development than it ought to have, considering only the period of pregnancy known or supposed to exist, we should carefully examine both the perfection of its own organization and the state of the appendages, especially the placenta and cord.² If these are not to be had, we cannot, in my

¹ Histoire, &c. des Ruptures de la Matrice, p. 38.

² I may be permitted to observe here, that a careful examination of the secundines in all cases of delivery or abortion, will amply repay the trouble of the task by the valuable facts which will be thus ascertained, in explanation of physiological difficulties which would otherwise lie buried in obscurity. I have for several years strictly adopted this habit, and owe to it several of the most

opinion, in such cases pronounce decidedly on the age of the child, without incurring the risk of being mistaken; and, perhaps, imputing impropriety of conduct to the perfectly chaste and virtuous.

But to proceed, let us now inquire what is the earliest period of gestation at which the condition of viability may be expected to exist; premising that by viability¹ is meant such a degree of perfection in the new-born child as renders it capable of sustaining its functions independently of the mother, and continuing its existence to adult age. In the former edition of this book I stated my belief, that the condition of viability was not acquired until seven months of intra-uterine existence were completed; my experience at that time not having furnished me with any earlier instance under my own observation, and of the particulars of which I had perfectly accurate knowledge: but very soon afterwards a case occurred to me, which afforded unquestionable proof that a child born after six months and eighteen days of utero-gestation, may survive. A patient of mine, a lady in rather feeble health, left town in July, for the south of Ireland, her husband being obliged to remain in town: she menstruated in the first week of October, and on the twelfth of that month her husband joined her: on the 30th April she was taken in labor, and I delivered her of a living child. It was very small and feeble, and with great difficulty its temperature was sustained and life preserved: on the eighth day it really appeared to die, but was resuscitated; this occurred again on the fifteenth day, and again it was revived: after this,

interesting preparations in my collection. In explanation of certain circumstances connected with malformations, discoveries of great value have been thus made; witness the results obtained from the investigations of Geoffroy St. Hilaire, and, still more recently, the highly interesting and remarkable case published by Sir A. Cooper, in which there were a healthy child and a monster without heart or brain in utero together, and attached to the same placenta; on examination it was found that the circulation was carried on by the vessels of the healthy child being continued into the cord of the monster. See Guy's Hospital Reports, vol. i. p. 227.

¹ "La viabilité pour un enfant qui vient au monde, n'est autre chose que la possibilité de vivre complètement et aussi long-temps que le commun des hommes; c'est à dire, de devenir un adulte, un homme fait, un véritable membre de société."—*Capuron, Méd. Lég.*, p. 152. "Nous définirons la viabilité, l'aptitude à la vie extra-uterine, caractérisée par la maturité de l'enfant, la bonne conformation des principaux organes de l'économie, et l'état sain de ces organes à l'époque de la naissance."—*Devergie, Méd. Lég.*, tom. i. p. 698.

although wretchedly feeble for many weeks, it ultimately did well, and lived to be thirteen years of age. Now here the period of gestation was exactly six months and eighteen days, or twenty-eight weeks and four days, making 200 days. Since the occurrence of the above case, I visited a lady one of whose children was born six months and two weeks after her husband returned home, and survived: the gentleman returned home on the 22d August, 1839, and the child was born on the 8th March, 1840, the interval being 198 days. Very recently, I have been informed by Dr. Henry Purdon of a case in which a child born on the 27th December, and which must have been conceived about the 12th June, lived nearly two years: the interval here was six months and fifteen days, or 198 days. Dr. Mease has also communicated to me a case in which the parties were married on the 24th October, and the child was born on the 10th May, the interval being six months and sixteen days, or 198 days. It lived eleven days.

In the above four cases, the condition of the child corresponded completely to the assigned period of gestation, and, from the respectability and moral character of the parties concerned, I think they may be considered as indubitable examples of viability at the periods mentioned.

A case is reported by Dr. Ducos, in the *Gazette des Hôpitaux*, of a child born at six months and ten days of "gestation calculated under circumstances very favorable to accuracy."¹ The skin of the child was hardly formed, there was no hair, the toes looked like a row of small pearls, the fingers were so small that they were compared to lucifer matches; it did not begin to smile until more than four months after birth, but ultimately did well.

A case recorded by Dr. Outrepont, of Bamberg, seems strongly in favor of the viability of a child of six full calendar months: so much so as to make a convert of Hencke, who had previously denied the possibility of such an occurrence, but acknowledged this to be an unequivocal example: in this case, the child was born twenty-seven weeks after the last menstruation, and its condition corresponded to such a term of gestation; it breathed immediately on being born, measured thirteen and a half inches,

¹ See *Lancet*, 1851, vol. ii. p. 177.

and weighed one pound and a half; the skin was covered with smooth, lank down, and was much wrinkled; the extremities were extremely small in proportion to the trunk, and kept constantly bent over the body, as during the existence of the foetus in the womb; the nails of the fingers and toes were like mere white folds of skin, the testicles were still within the belly, and the pupillary membrane was entire; it whined, but could not cry, slept almost constantly, and was obviously insensible both to light and sound; dentition was postponed till the third year. When Dr. Outrepont saw him in 1816, he was eleven years old, and only as big as a boy of seven or eight.¹

Mr. Tait has reported a case² in which the mother was married on the 22d July, 1839, having menstruated the week before, and on the 18th January, 1840, she was delivered of a female child; the interval here being five calendar months and twenty-seven days, or 180 days. The child had no nails, the head was covered with a thick, dark down, and the skin was unusually florid and thin; the extremities were imperfectly developed, and the membranæ pupillares were entire; its cry was faint and weak; for three weeks, it was quite unable to suck. It was not weighed or measured until the 27th February, forty days after birth; it was then nearly three pounds, and thirteen inches long, *the middle point being nearly an inch above the umbilicus*. It died on the 29th May.

It is stated in Beck's *Medical Jurisprudence* that the late Dr. Merriman, in his evidence on Bailey's divorce bill, 10th March, 1817, stated that he had known a child, born after six months and eighteen days, live to grow up; this, however, is quite incorrect; what Dr. Merriman did really state on this occasion was, that he had never known such a child to live long, or grow as a strong child;³ and in one of his lectures is the following: "I have never known an instance of a child born many days under seven months that lived a quarter of a year." For this extract I am indebted to his son, Dr. S. W. J. Merriman.

The case next to be referred to is a striking illustration of the

¹ See Hencke's *Zeitschrift*, &c., vi. 27, and also *Med.-Chir. Rev.*, vol. xxxi. p. 438.

² *Lancet*, 1842, April 23, p. 119.

³ See *Lords' Journal*, of above date, or *Lancet*, October 6, 1855, p. 332.

serious and important aspect which a question of premature birth and viability may assume, and how deeply its elucidation may affect interests of a very tender kind, involving not only the reputation of the mother, but that of the father also. The Rev. F. Jardine married Miss M. on the 3d March, 1835, and on the 24th August, that is five calendar months and twenty-one days, or 174 days after marriage, she gave birth to a living daughter, who survived till the 20th March, 1836. The parishioners of Kinghorn raised a *fama clamosa* to the detriment of their minister, and it was deemed expedient to institute a formal inquiry whether the conditions of that child were consistent with its being the legitimate fruit of the marriage of its parents; which inquiry lasted, with interruptions, from 1835 to 1839, and a great number of witnesses were examined, several of whom gave such unsatisfactory, and even discordant, accounts of the conditions of the child, that it is difficult to collect or state the facts of the case in this respect; but Dr. Thatcher, who, however, did not see the child until nineteen days after its birth, was of opinion that it, probably, measured about twelve or thirteen inches, and weighed about four pounds;¹ but these were only conjectures. The issue of this long protracted, and otherwise remarkable trial was, that the Presbytery of Kirkaldy, having agreed to adopt a common maxim of law, viz., "*Satius est impunitum relinqui facinus nocentis, quam innocentem damnari*," found the libel not proven; which decision being unsatisfactory to both parties, they protested, and appealed to the Synod of Fife; which body agreed to refer the whole cause to the then ensuing General Assembly of the Church of Scotland; which venerable body dismissed the appeal of the pursuers, sustained the appeal of the defender, and amended the sentence of the Presbytery, by finding the libel not proven, and so absolving the accused minister from all the conclusions against him.

If this case were to be decided by the provisions of the Scotch law,² which specifies six lunar months as the shortest period consistent with viability, no question could have been raised as to

¹ See Record of the Proceedings, &c., p. 101, A.

² The French civil code regards as legitimate and viable all children born after 180 days, or at six months. Capuron, Cours des Accouchemens, p. 69.

the legitimacy of the child; for here the period was 174 days, exceeding six lunar months by six days.

In his evidence on the above case, Dr. Thatcher deposed that, to the best of his knowledge and belief, he had seen, in the year 1835, three remarkable cases of children born decidedly before the completion of seven months of utero-gestation, which children, he had reason to believe, were then living, 1838.¹

In one of Dr. Hamilton's letters, relative to Mr. Jardine's case, he mentions that another case came before the General Assembly, about the year 1710, in which the Rev. Thomas Elder, minister of Whithorn, was deposed from his clerical functions, in consequence of his wife having produced a living infant within five months after marriage, which infant lived for some months, at least. The decision of the assembly was subsequently reversed, and Mr. Elder was reinstated in his clerical status, partly on account of his personal character, and partly on the faith of a certificate signed by the justly celebrated Dr. Pitcairn, and two others of the most eminent practitioners at that time in Edinburgh, Drs. Preston and Drummond. "We, underscribers, physicians and surgeons, declare, that a child born in the beginning of the sixth lunar month may be alive, and continue in life, which is *consistent* with our observation and experience:" Edinburgh, 12th May, 1710. The above case bears a close resemblance to that of Cardinal Richelieu, in whose case the parliament² of Paris decreed, that the infant, at five months, possessed that capability of living to the ordinary period of human existence, which the law of France required for establishing its title to inheritance.

Dr. Rodman, of Paisley, met with a case,³ 19th April, 1815, in which the child survived for a year and nine months, although the gestation was supposed not to have exceeded nineteen weeks, according to the belief of the mother, who had had five children, and could have no inducement to misstate, or misrepresent. Three weeks after birth, the child measured thirteen inches, and weighed

¹ Proceedings, pp. 96, 97.

² These parliaments of Paris were courts of inferior authority, somewhat resembling our County Courts.

³ "Case of a Child born between the Fourth and Fifth Month, and brought up," by John Rodman, M. D.: Edinb. Med. and Surg. Journ., vol. xi. p. 455; xii. p. 251.

one pound thirteen ounces: however conscientious the mother may have been here, I cannot help thinking she was mistaken; the length and weight correspond to a gestation of between six and seven months, instead of nineteen weeks or 133 days, which is seven days short of half the ordinary term. The facts of this case, if satisfactorily made out, would give color to what is stated of Fortunio Liceti, the Italian physician, who was said to have been born at four months and a half, and to have attained the age of manhood! *Credat Judæus Apella.*

Dr. Keiller has recorded¹ the particulars of a case, in which a child of about four months' intra-uterine life lived for about an hour; during which, it continued to move its limbs and *features*, the heart was observed to beat, and the carotids to pulsate: the last menstruation had taken place on the 8th of February, quickening on the 8th June, on the 17th of which month the foetus was expelled; it weighed nine and a half ounces, was eight inches long, and the placenta and cord weighed six ounces. This case is very accurately related, and the weight and measurement of this child serve to test some of the preceding cases. I may here mention that I saw one instance of a foetus which, at the utmost, could only have completed the fifth month, and which lived for a few minutes; and another of five months and a half, which lived for four hours: but in both, the state was that of mere existence, without the presence of any condition that could lead to the most remote expectation of life being continued. But it is to be remarked, that such cases as the last three, are invested with a very peculiar interest and importance in a medico-legal point of view, in questions where the fact of "live birth" falls under investigation: as the law no longer requires proof of crying or respiration in the child, but allows, as proof of distinct life, voluntary muscular movements. "Some have had a notion," says Blackstone, "that it must be heard to cry, but that is a mistake: crying, indeed, is the *strongest* evidence of its being born alive; but it is not the *only* evidence."² Lord Coke says: "If it be born alive, it is sufficient, though it be not heard to cry, for peradventure, it may be born dumb. It must be proved that

¹ Edinburgh Monthly Journal, Sept. 1854, p. 273.

² Commentaries, vol. ii. pp. 126, 127.

the issue was alive, for *mortuus exitus non est exitus*; so, as the crying is but a proof that the child was born alive, and so is motion, stirring and the like."¹

The opinion of Wm. Hunter, given in answer to an interrogatory put to him on this subject by Mr. Hargrave when writing his notes on the legal time for human birth, has, I think, been generally received as asserting seven calendar months to be the shortest period of gestation consistent with viability, more absolutely than his words at all warrant. "A child may be born alive at any time after three months; *but we see none born with powers of living to manhood, or of being reared, before seven calendar months, or near that time. At six months, it cannot be.*"² It will be at once perceived how much the strictness of this reply is modified, and its latitude extended, by the words "or near that time." Haller, also, is by many, supposed to have insisted on seven months, whereas in reality he specifies the *seventh month*. "Ante septimum mensem, foetus non potest superesse."³

It may just be mentioned here, that the celebrated Chaussier was a seven months' child; as was also George III., one of the most long-lived and prolific of our kings.

Before leaving this part of the subject, I wish to notice the fact, that it is peculiar to some women always to have the proper time of delivery anticipated by periods varying from two or three weeks to two months; and this for several pregnancies in succession. The writer was once engaged to attend a lady in her fifth confinement, who told him, a month beforehand, that from particular circumstances, she knew her time would be up about the 23d of the month, but that she expected her labor to occur about the 9th, as she had, on the two former occasions, anticipated by two weeks; she became in labor on the night of the 10th, and was delivered on the 11th. La Motte⁴ mentions two women who always brought forth at the end of seven months; and the same thing happened to the daughters of one of them. Van Swieten⁵ takes notice of a similar circumstance; as does

¹ Coke on Littleton, 30, a.

² See Paris and Fonblanque's Jurisprudence, vol. iii. p. 218.

³ Elem. Phys., vol. viii. p. 423.

⁴ Liv. i. ch. 28.

⁵ Comment., vol. xiv. pp. 6, 7.

also, Fodéré.¹ A member of the writer's family never passed the end of eight months, in three successive pregnancies; and a patient of his, who has borne five children, never went beyond seven months and a half, generally only seven; and in one instance, gave birth to a viable child at very little more than six months and a half (see p. 415); but such cases cannot be looked on as instances of gestation *completed*, but of premature labor from some peculiarity, or infirmity of the system, or indisposition in the uterus to enlarge beyond a certain size; nor is it contended or asserted by those writers who have recorded such cases, that the children had acquired their full growth: in the instances occurring under my own observation, they certainly had not: but under such circumstances, we should be extremely cautious in pronouncing an opinion on the uterine age of the child: particularly, when the period of gestation may have advanced to within a month of its expected termination; in which case, it might be impossible for us, with all our care, and all our knowledge, to draw the distinction between a child of eight months, and one of full maturity.

But in such a case as occurs from time to time, where a woman, six or seven months after marriage, or the return of her husband, produces a healthy, well-formed child of the *full size and development*, we need hardly hesitate about its illegitimacy; at least, I never saw an instance where a child avowedly of six or seven months' growth, presented an appearance even remotely resembling that of a full-grown and matured foetus. Even though the size alone may not enable us to distinguish the one from the other satisfactorily, there are several characters of imperfect development which mark the really premature foetus, whatever may be its size; while, on the other hand, there are other distinctive marks which accompany the fully matured child, although deficient in bulk. The situation of the middle point of the length was first proposed, as a test of the age of the foetus, by Chaussier, and his observations have been since confirmed by several others.² From the trials I have made of this test, I attach very considerable value to it.

¹ Méd. Lég., vol. ii. p. 128.

² Capuron, p. 172. Fodéré, vol. ii. p. 149. Burns, pp. 114, 118. Metzger, by Ballard, 168. Beck, 5th ed. p. 180, *et seq.*

In estimating the probability of any premature child's survival, we should not confine our consideration exclusively to the supposed duration of its intra-uterine existence; but we should also take into account the amount of healthy development it has acquired, and the degree of vigor and energy it possesses, recollecting the fact, of every-day occurrence, that of children born at the full time, while some are full of strength and vigor and weigh perhaps nine or ten pounds, others are born feeble, fragile, and delicate, and weigh no more than four or five pounds: and similar varieties must of course exist at periods of gestation anterior to mature birth.¹

TABLE No. 1.

Of Premature Births, and Survival of the Children.

No.	Last menstruation.	Supposed date of conception	Birth of child.	Duration of gestation.	Days.	Survival.
1	Oct. 29	Oct. 29	April 8	5 mo. 10 days	161	12 hours.
2	...	March 3 married	Aug. 24 1835	5 mo. 21 days	174	Till March 20, 1836.
3	...	July 22 married	Jan. 18	5 mo. 27 days	180	Till May 29.
4	...	"	"	6 mo.	183	7 weeks.
5	April 10	April 10	Oct. 16	6 mo. 6 days	189	More than 11 years, but was very diminutive.
6	...	April 1	Oct. 10	6 mo. 9 days	193	6 months after birth was doing well.
7	...	Jan. 31, 1820	Aug. 14	6 mo. 14 days	196	More than 30 years.
8	...	June 12	Dec. 27	6 mo. 15 days	198	2 years.
9	...	Oct. 24 married	May 10	6 mo. 16 days	198	11 days.
10	...	Aug. 22	March 8	6 mo. 14 days	198	Now 14 years of age. Husband returned home Aug. 22.
11	...	Oct. 12	April 30	6 mo. 18 days	200	13 years. Husband returned Oct. 12.

Of the above cases, Nos. 10 and 11 occurred under my own observation; and I know the facts of both to be beyond question. See p. 415.

¹ There are much greater differences in the weights of new-born children at the full time, than those mentioned in the text. Of 1601, the weights of which are given by Devergie, there were 3 which weighed only 2 pounds, and 31 which weighed 3 pounds. I saw a child which I was informed weighed 14 pounds; and Mr. J. D. Owens has given the particulars of a case in which the child was 24 inches in length, and weighed 17 pounds 12 ounces.—*Lancet*, Dec. 22, 1838, p. 477.

3. *Protracted Gestation.*—The possibility of an extension of the ordinary period of gestation has been, for a very long time, and still continues, a question of very warm debate; some maintaining that the time is fixed and admits of no variation; while others, who agree as to there being a certain period most frequently observed, believe that it is not exempt from variety, and may be prolonged. In this latter view of the subject I entirely coincide; and, indeed, cannot imagine why gestation should be the only process connected with reproduction for which a total exemption from any variation in its period should be claimed. The periods of menstruation are, in general, very regular, being exactly twenty-eight days; but while the general law is, thus, intervals of a lunar month, there are many women whose menses return exactly at intervals of a solar month; and I had one patient who menstruated regularly every second month only: while again, there are some in whom the return of the discharge anticipates by a few days; and in all those varieties, without the slightest appreciable derangement of their health.¹

Again, menstruation and the power of reproduction in the female, are very generally established, in these countries, about the age of fourteen, or fifteen; but we have already related instances of both taking place at much earlier ages (see p. 256, *et seq.*); while, on the other hand, there are instances where menstruation does not occur until the age of eighteen or twenty; and I saw one case in which it was not established until the age of thirty. So also, these functions generally cease about the forty-fifth year; yet, occasionally, instances are met with in which both are prolonged several years beyond that time of life.

We have seen, that while, in the great majority of cases, quickening takes place about the end of the fourth month of pregnancy, it is not unfrequently experienced at three months, and sometimes not for five.

The abbreviation and expansion of the cervix uteri bear, in general, a very uniform proportion to the period of pregnancy, and the entire obliteration of that part is usually coincident with

¹ For a case in which the regular menstrual period was five weeks, see Burns' *Principles of Midwifery*, 7th ed., p. 168.

the completion of gestation, and the establishment of labor; but, we have already seen, that while, in some instances, there is found, at the commencement of labor at the full time, a portion of the cervix distinctly projecting, at other times the projection of this part is effaced, and the os uteri considerably dilated, several days, or even weeks, before the accession of labor. (See pp. 155, 156.)

It is a law of nature very constantly observed, that dentition should commence a few months after birth, and that some of the teeth of children should show themselves within the first year at furthest; and instances where the cutting of the first teeth is deferred to the end of a year, are unusual; yet we not unfrequently find this order departed from, both on the side of prematurity and delay. A patient of mine had six of her children born with teeth either already protruded, or on the point of being so; while others do not get their first tooth until after the lapse of many months beyond the ordinary time; as happened to one of my own children, whose first tooth did not appear until the child had reached the twenty-first month of her age, she being, at the time, and previously, in perfect health; and in the case of premature birth already quoted from Dr. Outrepoint (see p. 416), dentition was postponed to the third year.

For a long time, the period of gestation in the lower animals was held to be invariable; but, as will presently be seen, the experiments and observations of Tessier, and still more recently those of Lord Spencer, have shown that such an opinion is diametrically opposed to facts carefully observed under the decisive circumstance of single intercourse, and in a variety of animals; but especially in cows, the conditions of whose gestation so closely coincide with those of the human female, and who are, at the same time, so much less exposed to the influence of causes likely to affect it; so that we cannot for a moment doubt the fact, that there is a great inequality in the term of gestation in different individuals of the same species.

The investigations of Tessier, which were undertaken at the instigation of Condorcet, and continued through a period of forty years, with a very unusual degree of precaution against error, or inaccuracy, as well as those of Lord Spencer, contain facts and

information more than sufficient, as appears to me, to satisfy any one on this point with regard to the lower animals.

The facts collected by Tessier¹ were the results of observations on so large a number of animals as 2136, besides those on incubation: viz., 577 cows, 447 mares, 161 rabbits, 25 sows, 912 sheep, 2 asses, 8 buffaloes, 4 bitches.

Of the 577 cows, whose period of gestation is nearly the same as that of the human female, being, according to Lord Spencer, 284 or 285 days—

21	calved from the 240th day to the 270th.
213	" 270th " 280th.
321	" 280th " 297th.
6	calved on the 298th day.
4	" 299th "
10	calved from the 300th day to the 321st.
2	omitted.
<hr/>	
577	

The variation between the shortest and the longest gestation, is thus eighty-one days; and the greatest extension amounts to thirty-six days beyond 285, the natural period.

Of the 447 mares, whose natural period of gestation is eleven months, or about 335 days²—

51	foaled from the 290th day to the 329th.
96	" 329th " 335th.
358	" 335th " 359th.
35	" 359th " 377th.
7	" 377th " 419th.
<hr/>	
447	

the difference between the extremes being 129 days, and the greatest protraction, eighty-four days.

A mare of my own furnished a well-marked instance of protraction; she was covered by Tyrant on the 6th of June, 1841, and did not drop her foal till the 20th of May, 1842, the interval

¹ Mémoires de l'Académie Royale des Sciences, Année 1817, tom II. p. 1.

² Tessier allows only 330 days, considering each month as consisting only of thirty days, which is not sufficient; 335 being, as nearly as possible, the number of days in eleven calendar months.

being eleven calendar months and two weeks, amounting to 348 days.

Of 912 sheep, whose natural period of gestation is five months, or about 153 days—

382	yeaned from the 146th day to the 150th.
534	“ 150th “ 153d.
84	“ 153d “ 155th.
7	yeaned on the 156th day.
5	“ 157th “
<hr/>	
912	

The greatest variation here is eleven days, and the extreme protraction, four days.

Of 161 rabbits, whose natural period of gestation is one month, or about thirty days—

15	littered before the 30th day
82	“ between the 30th and 31st
39	“ “ 31st “ 32d
25	“ from the 32d to the 35th
<hr/>	
161	

the difference between the extremes being eight days; two having littered on the twenty-seventh day: and the greatest protraction was five days.

With regard to incubation, he found that there was not unfrequently a difference of five days between the extremes, in the same clutch: and in the case of the eggs of the common hen, some of the chicks came out three days after the ordinary period of twenty-one days;¹ an excess in the period amounting to one seventh of the whole, and greater than that, which facts appear to show, may be *reasonably* contended for as affecting the period of human gestation. Willer observed an excess of four days.² Harvey speaks of the process as extending “on to the twenty-first or twenty-second day;” and in another place, says, “there is great diversity in the maturity of eggs, and some are more speedily perfected than others; as in trees laden with fruit, some

¹ Op. jam cit., pp. 13, 34, 35.

² Journ. de Méd., 1776, p. 35.

more forward and precocious, falls from the branches, and some more crude and immature, still hangs firmly on the boughs; so are some eggs less forward on the fifth day, than others in the course of the third."¹

Lord Spencer instituted a series of observations to determine the period of gestation in cows; and in the first instance, published the results obtained with reference to 764 of these animals, from notes carefully taken by himself, during several years.

1	cow calved at	220	days.
1	"	226	"
3	cows calved from	226	to 238 days.
4	"	238	" 245 "
4	"	245	" 252 "
12	"	252	" 259 "
4	"	259	" 266 "
21	"	266	" 273 "
89	"	273	" 280 "
427	"	280	" 287 "
167	"	287	" 294 "
24	"	294	" 301 "
6	"	301	" 308 "
1	cow calved at	313	days.

764

From this, it appears that 314 cows calved before the 284th day and 310 after the 285th; so that, the probable period of gestation ought to be considered 284 or 285 days; so large a number as 427 out of 764 having calved in the forty-first week, or from the 280th to the 287th day. We find, also, that no less than 310 went beyond the average period of 285 days, by intervals varying from one day to twenty-eight, which was the greatest protraction observed. With regard to any influence, or relation between the sex of the offspring and the prolongation of the gestation, Lord Spencer thinks there is some foundation for the opinion; since it appears that from the cows whose period of gestation did not exceed 286 days, the number of cow-calves produced was 233, and bull-calves 234; while from those whose period exceeded 286 days, the number of cow-calves was only ninety, while the bull-calves were 152.

¹ Works, *ut antea*, pp. 240, 265.

Lord Spencer having subsequently bought another bull, found, that of sixteen cows impregnated by this bull, which was aged, the average period of gestation was $290\frac{1}{4}$; and of fifty-nine other cows in calf by this bull, the average period was 288 days; or, taking the whole seventy-five cows, the average was $288\frac{1}{2}$, an excess of about four days above the ordinary period. His Lordship also observes, that while of the 764 cows first kept account of, 185 went less than 281 days, *not one* of the seventy-five cows in calf to this bull did so. And again, while only one-seventh (111) of the same 764 went above 289 days, between a third and a half (twenty-nine out of seventy-five) of those covered by the new bull went above 289 days.

The influence of this particular male in producing protraction of gestation seems here most conclusively proved; and I would ask what is there unreasonable in supposing that there are men endowed with a like peculiar power? Instances have been recorded of men in whom there seemed to be inherent the power of always begetting more than one child at a time; as in the remarkable instances of Blunett¹ and Feoder Wassilief.² I had once a patient who was married at the age of sixteen, and bore twins every year for the succeeding eight years; after which, I lost sight of her.

I have just received from Dr. Nicolls of Longford, a statement with regard to the periods of gestation of his own cows, noted by himself; which, although on a small scale, is interesting on account of the accuracy with which the facts were noted, and their close accordance with those of Lord Spencer.

Of the twelve cows observed by Dr. Nicolls, one went 276 days, one 279, two 282, one 283, one 285, two 286, one 288, one 293, one 295, one 303. It will be observed here that six, or one-half the whole number, exceeded the ordinary period of 285 days: and of these six calves, four were bulls. Dr. N. observes that, "according to this record, the bull-calves were carried from one to three weeks longer than the heifers."

The writer has made several inquiries on this subject, with

¹ Menagiana, tom. i. p. 332, Amsterdam, 1713, quoted in Merriman's Synopsis, p. 263.

² Gentleman's Magazine, Sept. 1783, vol. liii. p. 753.

regard to cows and mares, and has invariably received the same answer from persons well qualified to judge, viz: that it was a common occurrence for the cow to go two, three, or four weeks beyond nine calendar months, and that with regard to mares, some went eleven months, and some twelve. It is also an opinion commonly entertained among breeders, that the disposition to protraction is greatest in those animals which are aged, and have most frequently been impregnated; and one of my informants added that mares which were kept out in winter, and encountered a hard season, were more apt than others to have their gestation protracted; my mare Cora (already referred to, p. 426), was aged, as was also the horse that covered her; and so was Lord Spencer's bull already referred to. The late Professor Hamilton, whose observations on the domestic animals were confined to cows, says¹ "he has ascertained by facts which are incontrovertible, that the more calves the cow has, the longer is the duration of her pregnancy. One cow in his father's possession exceeded the ordinary period by three weeks." But, on the other hand, we have the assurance of Tessier that he ascertained beyond a doubt, contrary to the generally received opinion on the subject, that the protraction of gestation was not influenced by the age, constitution, or food of the animals; nor by the size, strength, or sex of the fetus;² but more recent investigations have at least rendered doubtful the truth of his conclusions in these latter respects.

There is a very curious fact mentioned by the late Sir Everard Home, which, if strictly correct, would go a great length in strengthening the argument from analogy. He says that, "where the female of one species of animals breeds from the male of another, the utero-gestation of whose species is different in its period, there appears to be no approximation in the time in which the hybrid is brought forth; but the longest term of the two is the time of such utero-gestation. Thus the mare, covered by the ass, goes eleven months, her usual period; and the ass, covered by the horse, goes *eleven months*, although *ten is her usual period*."³

But if we relinquish the less certain support of analogy, and

¹ Pract. Obs., p. 109.

² Op. jam. cit., p. 15, *et seq.*

³ Philos. Trans., 1822.

resort to facts alone, as observed by ourselves or others worthy of belief, I am quite satisfied that we are in possession of more than enough to prove the point; and let it not be forgotten that the combined testimony of all who have maintained the unvarying fixedness of the natural term, merely because they had known no instance to the contrary (and they could have no other grounds for their belief), is, after all, only negative evidence, and must fall before a single well-established instance in which that term was exceeded.

Before proceeding, however, to a detail of facts, I propose to notice one or two subjects of consideration which, as it appears to me, ought to have some weight in the determination of this question.

In the first place, then, it is proved by the experiments of De Graaf, Mr. Cruikshank, M. Saumarez, and others, that vivification of the ovum does not always take place immediately on coition, but that an uncertain interval of time elapses between the act of intercourse and the communication of the vivifying influence to the germ in the ovary; and it is probable, almost to certainty, that a variety of physical, and perhaps moral causes also, may interfere with the propagation of the required influence, some of which may accelerate, while others may retard it.

Again, even if we suppose the period required for the complete maturation of the ovum in utero to be invariably fixed, another circumstance connected with it must be taken into account, as likely to affect materially the question under consideration, namely: the time occupied, in different instances, in the transfer of the ovum from its seat in the ovary, along the Fallopian tube into the cavity of the uterus; for, when we come to reflect on the successive steps of that process, we find that there is not one of them free from a liability to be interrupted or retarded, in permitting or assisting the transmission of the germ.

Thus the ovulum may lie at a greater than usual depth in the substance of the ovary, which may also have had its texture thickened and indurated by the effect of previous inflammation; or the same change may have taken place in the proper coat of that body, or in its peritoneal investment, which will then still further delay the escape of the ovum, by resisting the natural tendency to open under the increasing distension, and by render-

ing a still longer time necessary for the accomplishment of the requisite absorption. (See p. 344, *et seq.*)

Again, the same morbid alteration, thus affecting the ovary, constantly produces changes in the condition of the tube, which, by having formed adhesions with the ovary, or with other parts, in its course to the uterus, or by having its natural diameter contracted, may be incapable of transmitting the ovum, without considerable delay; such causes having been found sufficient to arrest its passage altogether, and produce death by causing extra-uterine pregnancy.¹

Then, as it advances further, its reception into the cavity of the uterus, and its attachment therein, may be impeded and delayed by a defect in the due preparation of the decidua nida-mentum, through the medium of which it is to derive its support; all which causes I find clearly recognized by Professor Bischoff in one of his latest works on the subject, in which he observes that "it can scarcely be doubted that the times occupied by the transit of the ovum from the ovary by the arrest of the ovum, and the preparatory changes in the uterine mucous membrane, suffer great differences in individuals, and hence entail a longer or shorter duration of gestation."²

As already mentioned in reference to the lower animals, so also with regard to women, it has been supposed that more advanced age, repeated impregnation, and the male sex of the child, gave a greater disposition to extension of the term beyond the natural limits; and some have even maintained that the term of utero-gestation is entirely regulated by the ages of the individuals concerned; but no satisfactory or decisive evidence has been, as yet, offered in support of such a theory; I have, however, seen enough to make me believe that, as there are some women who, in consequence of a constitutional peculiarity, never complete the full term of gestation, but are repeatedly confined at the end of seven or eight months (see p. 421), so are there others who seem to have an equal propensity to a prolongation of the period. Such was apparently the case in an instance fully-

¹ See cases by Dr. Gordon Jackson, in Dublin Med. Journ., vol. ii. p. 196, and by Dr. Armour, in Glasgow Med. Journ., vol. ii. p. 158.

² Zeitschrift für rat. Med., Band iv., Heft. 1. See Brit. and For. Med.-Chir. Rev., April, 1854, p. 567.

detailed by Dr. Hamilton,¹ in which the lady married at the age of thirty-seven, almost immediately proved pregnant, and on that occasion, and the subsequent one, was thought to have carried her child to the eleventh menstrual period; she was afterwards three times artificially delivered with success, after she had passed the tenth menstrual period by one week. Dr. Dewees says:² "I have had every evidence, this side absolute proof, that it has been prolonged to ten calendar months, as an habitual arrangement, in at least four females that I have attended; that is, each of these women went one month longer than the calculations made from an allowance of ten or twelve days after the cessation of the last menstrual period, and from the quickening, which was fixed at four months." Professor Retzius, of Stockholm, had a still more remarkable instance in his practice, in which this peculiarity, to an extreme degree, was hereditary in a mother and her two daughters. To these instances I may add that of a patient of my own, who has now borne thirteen children, and who exceeded her expected time with her last four or five children, by from four to six weeks. But it must not be forgotten that in all these cases the calculations were based on the last appearance of the catamenia, and consequently do not afford perfectly conclusive grounds for an opinion; at the same time when, very soon after menstruation, morning sickness, and other indications of pregnancy are experienced, and quickening takes place within four months, a combination of evidence is presented which ought to be considered as entitled to a high degree of consideration.

I think I am justified in saying that the weight of authority is altogether on the side of those who believe in the occasional protraction of gestation; in favor of which, we find the following have recorded their opinions: Buffon, Blundell, Burns, Capuron, Denman, Desormeaux, Dewees, Fodéré, Gardien, Haller, Hamilton, Harvey, W. Hunter, La Motte, Lebas, Leroy, Levret, Mauriceau, Merriman, Murat, Petit, Richerand, Roussel, Simpson, Smellie, Velpeau, and Zacchias, together with many others of less, though by no means inconsiderable authority. Many of these

¹ Pract. Obs., &c., p. 106.

² Compendium of Midwifery, p. 134.

have, in confirmation of their opinions, related the cases on which their conviction was grounded, and which, of course, had fully satisfied their minds; and I cannot believe it possible that all of these writers could have been mistaken in a mere matter of fact or observation; and that none of the cases which they have put on record were really instances of gestation prolonged beyond forty weeks. At the same time, I must add that the cases which appear to me to carry with them the fullest demonstration of their truth, are those in which the ordinary term was not exceeded by more than three or four weeks.

Aristotle, after stating that¹ "there is good reason why animals should have the period of gestation, generation, and duration of life in certain cycles," adds, "in the human species alone is the period of utero-gestation subject to great irregularity. In other animals there is one fixed time, but in man several; for the human foetus is expelled both in the seventh, and tenth months, and at any period of pregnancy between these."

"In all other animals," says Pliny,² "there are stated periods and seasons for reproduction and utero-gestation; in man alone, are they undetermined:" and in another place he speaks of human birth, as taking place "from the seventh to the eleventh month." And Harvey, after quoting these opinions of Pliny, adds,³ "and this is to a great extent true; for in his case (*i. e.* man's), although nature has laid down for the most part, certain boundaries, yet there is sometimes a vast difference in individuals, and instances are recorded of women bringing forth viable children, some in the seventh, and others in the fourteenth month." "There was indeed, not so long since, a woman in our own country, who carried her child more than sixteen months; during ten of which, she distinctly felt the movements of the foetus, as indeed did others, and at last brought forth a living infant."

Dr. Blundell, in his evidence before the House of Lords on the Gardner Peerage case, declared that he knew positively one case in which conception must have taken place on the 9th of November, and delivery did not occur till the 23d of August following;

¹ De Generat. Anim., lib. iv. cap. 4.

² Lib. vii. cap. 5.

³ Works, *ut antea*, pp. 525, 526.

making an interval of 287 days, or one week beyond the usual time.¹ On the same occasion Dr. Merriman stated his opinion, that forty weeks was the normal period, but that this might be exceeded; and since then, in a special publication on the subject he says: "I can mention two cases in married women who had borne children before, and whose characters the breath of slander had never sullied; in one of whom the symptoms of labor did not occur till the 283d day after her husband had left her to go to Ireland, where he remained nearly four months; in the other instance, she was not delivered till 286 days after she had last seen her husband."²

Wm. Hunter, in answer to a query on this subject, said: "The usual period is nine calendar months; but there is, very commonly, a *difference of one, two, or three weeks*. I have *known* a woman bear a living child in a perfectly natural way, *fourteen days* later than nine calendar months, and *believe* two women to have been delivered of a child alive, in a natural way, above ten calendar months from the hour of conception."

The late celebrated Professor Desormeaux says, "Observations well attested prove, that the term may be prolonged beyond the usual period;" and he adduces the following case, occurring within his own observation, in a patient whom he attended: "A lady, the mother of three children, became deranged after a severe fever. Her physician thought, that pregnancy might have a beneficial effect on the mental disease, and permitted her husband to visit her; but with this restriction, that there should be an interval of *three months between each visit*, in order that, if conception took place, the risk of abortion from further intercourse might be avoided. The physician and attendants made an exact note of the time when the husband's visit took place. As soon as symptoms of pregnancy began to appear, the visits were discontinued. The lady was closely watched, all the time, by her female attendants. She was delivered at the end of nine calendar months and a fortnight, and Desormeaux attended her. Now, supposing the nine months to have been those containing the smallest number of days, they would amount to 273, in addition

¹ Report of Proceedings by Le Marchant, p. 155.

² Synopsis, &c., 5th. ed., p. xxxi.

to which are to be added 14, which make 287 days; or, if other nine months were those included, we might have 276 plus 14, making 290. Concerning this case, Raige-Delorme, who is rather sceptical about retarded gestation, declares, that it is a fact possessing "the elements of a perfect demonstration," in favor of a protraction so far.¹

Velpeau, in addition to eight cases formerly published, has recorded another, in which, at the fourth month, he distinctly felt both the active and passive movements of the child; the symptoms of labor, which occurred at the end of the ninth month, were suspended, and did not return for thirty days.² He considers the gestation to have extended to 310 days.

The next case to which I shall refer, occurred in this city, under the care of my friend Dr. Jameson, and is, on many accounts, one of the most remarkable on record. A lady menstruated for the last time, in the latter end of April, 1841, and gave birth to a healthy male child on the 13th of February, 1842, under the care of a midwife; she recovered well, but her size remained large. On the 3d of April, that is seven weeks afterwards, Dr. Jameson was called to see her; when she expelled a male fœtus, between eight and nine inches long, shrivelled and dark, but not at all putrid, or decomposed. Now, in this case, the blighted fœtus had a gestation of forty-seven weeks, supposing the child born on the 13th of February to have come to its full time; which seems probable, when we compare the date of its birth with that of the last menstruation. The full details of this case are replete with interest in several other respects also.³ (See p. 307.)

The following case, also, of prolonged gestation with a morbid ovum, seems to me of no ordinary interest; and from the degree to which it attracted my attention at the time, and the care with which I watched its progress, and investigated every circumstance connected with it, it may be received as perfectly accurate in its details.

Bridget Smith, the subject of a case formerly related, p. 272, about forty-two years of age, and now grown very stout and fat,

¹ Dict. de Méd., tom. x. p. 462.

² Traité des Accouchemens, tom. i. p. 383.

³ See Dub. Med. Journ., vol. xxii. p. 15.

applied to me for advice in November, 1843, fearing that she was laboring under some uterine disease.

She stated that she had menstruated as usual, on the 10th of July, and not since. I could feel the uterine tumor above the pubes, the areolæ were formed, and on inspection of the vagina and os uteri, the dark bluish color was distinctly observable, especially about the os, where the hue was as dark as port wine. Examined per vaginam, the uterus had all the feel of gravidity. I told her that there was nothing wrong; but that she was four months pregnant, and to do nothing.

She came to me again in January, saying that she did not think she was getting any larger, and that she had not quickened, which greatly surprised her. I examined, and found all the former symptoms of pregnancy diminished in distinctness; but as she was in perfectly good health, nothing was done. I spoke cheerfully to her, and desired her to come to me again in a month (February), which she did, expressing great anxiety about her state, being, as she said, seven months gone, without quickening, and growing decidedly smaller, instead of larger. I now examined her with great care; the mammary changes had become very indistinct, I could not feel any tumor above the pubes; and per vaginam, the uterus seemed small, and over firm; the bluish color of the vagina had quite disappeared, and, in fact, no evidence of pregnancy remained; true, the catamenia had not reappeared, and the woman was in perfect health; but then, she was past forty-two, and the function was perhaps ceasing.

I did not say so to her, but told her candidly, that I believed I had been mistaken about her being pregnant, and strongly advised her, as she was so well, not to be uneasy, but to take, from time to time, an aperient medicine which I ordered for her; to come to me occasionally, but particularly to let me know if she had any new symptoms, or discharge, or if anything passed from her; nothing of the kind, however, occurred until the night of the 1st of June, 1844, when she was seized with severe expulsive pains, and considerable flooding; and after two or three hours, expelled a solid mass about the size of a goose-egg, which, on being opened and examined, was an ovum in a state of tuberculation; its walls being nearly half an inch in thickness, but con-

taining no foetus; the membranes were distinct, and also a portion of the funis.

Now let us turn our attention for a moment to the dates in this case. Menstruation occurred for the last time on the 10th of July; and supposing conception not to have taken place till the last possible moment, it must have been on, or before the 6th of August: from which day to the 1st of June, there had elapsed 300 days, being twenty days over forty weeks, the ordinary period of gestation; but supposing conception to have occurred, as it more probably did, about the 17th of July, then this molar gestation would amount to 320 days.

Dr. Dewees, the professor of midwifery at Philadelphia, relates that the husband of a lady who was obliged to absent himself for many months, in consequence of the embarrassment of his affairs, returned, however, one night clandestinely, and his visit was known only to his wife, her brother, and Dr. D. The consequence of this visit, was the impregnation of his wife; and she was delivered of a healthy child in nine months and thirteen days after this nocturnal visit;¹ making gestation amount to at least 286 days, or perhaps 289, according to the months which fell into the calculation; and after making the statement just quoted (p. 433), he adds: "Besides, a case has occurred within a short time, in this city, in which, the lady was not delivered for full ten months after her husband's departure for Europe; yet so well, and so justly too, did this lady stand in public estimation, that there did not attach the slightest suspicion of a sinister cause."²

Denman, whose accuracy in observation, and fidelity in stating results, are alike admirable, says:³ "I have met with several instances of those, who, from particular contingencies, such as the casual intercourse with their husbands, or their return to, or absence from them, for a particular time, have been able to tell exactly, when they became pregnant; and none of these have exceeded forty weeks. I am therefore persuaded, that the term of utero-gestation is as accurately limited in women as in animals." But he afterwards distinctly recognizes occasional protraction when he says: "At the expiration of forty weeks, the

¹ An interesting fact connected with this case has been already noticed, p. 83.

² *Compendium of Midwifery*, 5th ed., p. 134.

³ *Introduction to Midwifery*, 5th ed., pp. 252, 254.

process of labor commenceth, unless it be hastened, or *retarded*, by some particular circumstance."

Dr. Hamilton, the late distinguished professor of midwifery in Edinburgh, states "his solemn conviction, that he has met with at least twelve cases in the course of practice, where there could not be the shadow of doubt of the protraction of human pregnancy beyond the ordinary period."¹ "But he does not think himself entitled to give a decided opinion on the period to which the protraction may be extended. He is quite certain, however, that the term allowed by the Code Napoléon, viz., 300 days, is too limited; and he is inclined to regard ten calendar months, which he believes to be the period established by the usage of the Consistorial Court of Scotland, as a good general rule; liable, as the Napoleon Code has admitted, to exceptions upon satisfactory evidence, that menstruation had been obstructed for a certain time."

One of the most recent authorities on this subject is Dr. Hamilton's still more distinguished successor, my esteemed friend Dr. Simpson,² who states, as the result of his observations, that the term of human pregnancy is not, as some would insist, a definite and precise time; but that deviations from it, both in the way of diminution and excess of time, are more common than is generally supposed. He believes its normal duration to be from 274 to 280 days. He gives the details of a very remarkable and touching case in which he considers gestation to have been protracted to the 314th day from the last day of the catamenia, which was the 24th of September, 1851; and delivery did not take place till the 3d of August, 1852: and even if we suppose that pregnancy did not commence until immediately before the next return, the gestation would amount to 290 days. This lady had during the time encountered most fearful mental excitement and bodily exertion. "A large steamer, in which she was, caught fire when two or three days out at sea, and only a small number of the passengers and crew escaped. After making almost superhuman exertions to save herself, and a young son seventeen months old, whom she held in her arms, and after having her body severely bruised and contused, she was exposed for seven-

¹ Pract. Obs., pp. 113, 114.

² Obstetric Memoirs, &c., vol. i. p. 328, *et seq.*

teen hours, in an open boat, with little or no clothing, and sitting immersed several inches deep in water, during the whole of that long and anxious period." Dr. Simpson very pertinently asks: "Could the protracted mental agitation and trial have, in any way, led to the unusual prolongation of her pregnancy?"

In another place, after adverting to the fact already noticed in these pages, that conception may occur after one or two months of accidental suppression, and thus a gestation really normal, may appear to be protracted, he adds in a note, p. 334:—

"It has sometimes seemed to me, also, not improbable, that some cases of apparently prolonged gestation could be accounted for by another explanation. All our latest and best anatomists seem now to agree that the decidua of impregnation is merely an altered and hypertrophied state of the mucous membrane of the cavity of the uterus: and that, consequently, the decidua is not at first a shut sac, but has the orifices of the Fallopian tubes and os uteri for a time opening into it. And it seems not entirely impossible that the ovulum of one impregnation dying without the decidua being immediately cast off, the cavity of the decidua (or in other words, of the uterus) remaining permeable, a second impregnation may possibly take place within a short time, and the decidua of the first impregnation serve as the decidua of the second conception. If ever such an occurrence takes place, a catamenial period might be passed without any catamenial discharge—and hence an unavoidable error in calculation be fallen into."

After detailing and commenting upon the investigations of Tessier and Lord Spencer, he sums up by saying: "Such direct experiments and observations upon the lower animals afford evidence which necessarily, I think, forces us to admit, that in exceptional cases in the cow—and hence also, as we certainly may fairly infer, in the human female—the period of gestation may be prolonged thirty, or thirty-five days beyond its normal and usual duration. And it is not impossible that further accurate and repeated experiments of the nature of those performed by Lord Spencer and M. Tessier, may yet establish, by the same kind of proof, even a more extended limit as the *ultimum tempus parendi*."

Mr. Burns, after stating that the normal period of gestation is

forty weeks, but that it may be abbreviated, says:¹ "On the other hand, it is equally certain that some causes which we cannot explain or discover, *have the power of retarding the process*, the woman carrying the child longer than nine months, and the child, when born, being *not larger than the average size*. How long it is possible for labor to be delayed beyond the usual time, cannot be easily ascertained." "The longest term I have met with is ten calendar months and ten days, dated from the last menstruation. In the case of one lady who went this length, her regular menstrual period was five weeks, and in her other pregnancies, she was confined exactly two days before the expiration of ten calendar months after menstruation."

Dr. Campbell, after stating that he had devoted his attention to this subject for several years, says,² that of "four cases, *where the evidence was clear*, in one, pregnancy was protracted eleven days, in a second, thirteen, and in a third, eighteen days beyond nine calendar months. The fourth was one in which the foetus was expelled in a putrid state; when its life became extinct, the gestation wanted fourteen days of nine calendar months; but labor did not come on for twenty-four days after the motions of the child had ceased;" that is, until ten days beyond nine calendar months.

In the case of *Anderton v. Whittaker*, tried at Lancaster, in the year 1827, the young woman, who had been seduced, deposed on oath: "It was on the 8th of January that I had the intimacy with the defendant, *but never had any before or since*. The child was born on the eighteenth of October." On being cross-examined, she said: "The 8th of January was a Sunday. I don't know where the defendant had been spending the day, but he came to our house in the evening, and stayed till ten or eleven at night. My misfortune happened about eight o'clock." Other confirmatory evidence was adduced, and the jury found a verdict for the plaintiff.³ The gestation in this case amounted to 283 days.

A case, very much resembling the above, occurred in one of

¹ Principles of Midwifery, 9th ed., p. 194.

² System of Midwifery, p. 70.

³ See Report of the Trial in the Observer Sunday Newspaper for 9th Sept., 1827.

our northern counties a few years since; a young woman, daughter of a respectable farmer, and of steady, moral, and religious principles, not being very well, had lain down on her bed, all the rest of the family being absent from the house, it being Sunday; when a young man, a neighbor, went into her room, and, under a promise of marriage, had connection with her: she afterwards deposed to these facts on oath, stating the occurrence to have taken place on the 21st of May, 1843, and at no other time, either before or after. Her father had a distinct recollection of the day, and of the reason of his absence from home. The child was born on the 7th of March, just 291 days after the date of intercourse. My informant, Dr. Patton, says: "The young woman was rather more than eighteen years of age, and I have every reason to believe, from my knowledge of the parties, that the above statement is perfectly correct. The father of the child has tacitly agreed to its correctness, by granting a maintenance to the child, and some compensation to the injured girl."

La Motte relates the following instances of prolonged gestation, which appear unexceptionable.¹ A lady, residing fifteen leagues from Paris, requested him to remain at her house from the 12th June, 1699, as she expected her labor to occur between the 18th and 20th of that month; because her husband had returned home from a long voyage on the 18th of the preceding September, and was taken ill three days after his arrival: but her labor did not occur till the 30th, that is, at least 282 days after conception, or perhaps 285.

He attended another lady, whose husband left her on the 25th January, 1702, and she was delivered on the 18th November, that is, after a term of 297 days at least, and probably of greater length, as La Motte mentions that the patient considered herself pregnant at the time of her husband's departure; having begun, at that time, to experience some of the symptoms of pregnancy.

The following case, occurring within my own observation, I consider as perfectly decisive. In January 1835, in consultation with Dr. Beatty, I saw a patient who, in reply to a question as to her having come to her full time, said, that she had long passed it; and, on being questioned as to why she thought so, she

¹ *Traité des Accouchm.*, obs. 74, 75, p. 152.

stated that she had seen her husband but once during the previous year; that he had visited her on the 18th March, and was obliged to leave her the next day: soon afterwards, she began to experience the symptoms of pregnancy, but her labor did not commence till the 4th January.¹ The period of gestation, in this case, amounted to 292 days. I should add, that I feel the more fully persuaded of the accuracy and truth of this woman's statement, from having subsequently heard from Dr. Churchill, that she had consulted him in the latter part of December, being, she said, uneasy as to her condition, and assigning as her reason for being so, her having so long passed the time at which she thought she must, of necessity, have been delivered.

The next case afforded all the necessary elements for an accurate calculation, and I look upon it as quite conclusive so far. I attended a lady in her confinement, on the first of October, 1838, who must have been impregnated some days before the 22d of the previous December: at which time, her husband's brother, to whom he was greatly attached, was very ill, and died on that day: her husband was in great distress of mind, and in such depression, that he had no connection with his wife for three or four days before his brother's death, on the 22d, nor for a month afterwards; the lady had a very slight appearance of menstruation on the 25th December, and began to exhibit unequivocal symptoms of pregnancy during January: she fell into labor on the 30th of September, and was delivered next day. Now, supposing conception to have occurred in this case so late as the 20th December, gestation must have continued at least 284 days.

Dr. Reid has recorded² two cases, which appear to be undeniable instances of protraction beyond forty weeks; one to 287 days, and the other to 291, or 293 days: in the first, which occurred under very peculiar and distressing circumstances, the catamenia appeared last, on the 5th of March, intercourse occurred on the 12th, symptoms of pregnancy on the 14th April, quickening July 6th, and delivery on the 24th December, = 287 days. In the second, the last catamenia were on the 10th September: the husband came home from abroad on the 15th, and went away

¹ See Dublin Medical Journal for September, 1835, p. 78.

² Lancet, 1850, vol. ii. p. 79.

again on the 17th: symptoms of pregnancy were experienced in October, and labor took place July 5th, the interval being 291—293 days.

I cannot close this part of the subject without directing the reader's attention to the cases related by Dulignac,¹ Fodéré,² Dr. Granville,³ and Mr. Sabine,⁴ which, occurring as they did in their own wives, and under circumstances where there could be no possible motive to deceive, and where every successive period of gestation was carefully observed by persons so eminently qualified to form a correct opinion, are entitled to great attention; although the calculations were based on the less certain ground of the last appearance of the catamenia.

Having thus, I think, both by reasoning, analogy, and facts, established the principle I contend for, I wish to observe, that it does not appear that the amount of protraction has any discoverable, fixed, or settled relation to any other circumstance connected with gestation; and a survey of the cases related must compel us to reject, as inaccurate, the doctrine lately promulgated by Dr. Tyler Smith,⁵ viz., "that in the rare cases where the duration of pregnancy exceeds the ten menstrual periods, the function of parturition is deferred to the following period, so as to make pregnancy reach to eleven periods inclusive." Unquestionably this is not so.

It appears to me that several of the foregoing cases ought to carry conviction to any unprejudiced mind; and it is to be recollected, that if any one of them be true, it establishes the fact, in defiance of all objections made by those who deny it because they have not met with any case of it themselves, or because they conceive it to be inconsistent with the usual or established order of nature.⁶ "We ought to admit it," says Fodéré, "not merely because it is possible, but because we have abundant proof that it has happened."

¹ In the *Causes Célèbres*.

² *Médecine Légale*, vol. ii. ch. 8, p. 195.

³ *Le Marchant's Proceedings in Gardner Peerage Case*, p. 65.

⁴ *Ibid.*, p. 111.

⁵ *Op. jam cit.*, p. 115.

⁶ "Ignorat naturæ potentiam qui illi non putat licere, aliquando, nisi quod sæpius facit."—*Seneca, Nat. Quæst.*, lib. vii. cap. xxvii.

"On peut les en croire," says Roussel,¹ "non point parcequ'ils l'ont dit, mais parcequ'un fait qui ne répugne point à l'esprit, et qui ne choque point la justesse et l'ordre naturel des idées, avancé par des hommes instruits, doit être cru, si on n'a pas une preuve complète et démonstrative du contraire."

In the next place, we find that the laws of different countries have been framed from a persuasion, on the part of the legislators, that a protraction of the ordinary term of gestation might occur. Thus the law of France² provides that the legitimacy of a child born within 300 days after the death or departure of the husband shall not be questioned; and the child born after more than 300 days is not declared a bastard, but its legitimacy may be contested.

The Prussian civil code declares that an infant born 302 days after the death of the husband shall be considered legitimate.³

The Frederician code, without absolutely declaring children born in the eleventh month to be illegitimate, attaches such conditions to the proof of their legitimacy as make it unattainable.⁴

The Scotch law is very precise: "To fix bastardy on a child, the husband's absence must continue till within six lunar months of the birth; and a child born after the tenth month is accounted a bastard."⁵ Our English law fixes no precise limit,⁶ but the decisions that have been made, from time to time, are in favor of the possibility of protracted gestation.

The first satisfactory precedent of which I am aware, is that *M. 17 Jac. B. R. Alsop and Stacey*. Andrews dies of the plague; his wife, who was a lewd woman, is delivered of a child *forty weeks and ten days* after the death of the husband; yet the child was adjudged legitimate, and heir to Andrews; for *partus potest*

¹ *Système de la Femme*, p. 175.

² *Code Civile*, Art. 314, 315. Vide *Devergie, Méd. Lég.* tom. i, p. 460.

³ *Metzger*, pp. 427-429.

⁴ *Part i., b. 2, t. 5.*

⁵ *Erskine's Institutes of the Laws of Scotland*. In the proceedings on the Gardner Peerage case, the Attorney-General laid it down that the ten months referred to were solar months. See *Le Marchant*, p. 328.

⁶ "And so it is of all children born so long after the death of the husband that, by the usual course of gestation, they could not be begotten by him; but this being a matter of some uncertainty, the law is not exact as to a few days."—*Blackstone*.

protrahi ten days *ex accidente*. The decision in this case, was pronounced by the Attorney-General, in the Gardner Peerage case, to be an answer to the principle that forty weeks is an absolute bar in point of law.¹

Radwell's case, 18 Edwd. 1, has been quoted, but incorrectly, as a precedent against the admission of an extension of forty weeks. "In assize by John Radwell, against Henry, son of Beatrice, who was wife of Robert Radwell, quia compertum est quod dictus Henricus fuit natus per undecem dies, post ultimum tempus pariendi; mulieribus constitutum, and, therefore, it was adjudged quod dictus Henricus dici non potest filius prædicti Roberti, secundum legem et consuetudinem Angliæ constitutum;"² and the *legitimum tempus* is afterwards stated to be "nine months, or forty weeks:" but in this case, the adverse decision was pronounced because it was shown to the jury that the father had been laboring under a severe disease, and could not have cohabited with his wife for a month before his death; forty weeks and eleven days after which, the child was born: besides, after the husband's death, the widow swore that she was not pregnant; on which occasion, the following extraordinary scene is described as having taken place in the court: "Et predicta Beatrix presens in curiâ, quæsitâ an esset pregnans, necne, juramento assererat se non esse pregnantem, et ut hoc omnibus manifestè liqueret, vestes suas, usque ad tunicam, exuebat, et in plenâ curiâ, sic se videri permisit."

In the case of Forster and Cooke, 1783,³ a legatee filed a bill to have his legacy; and in order to define the person on whom he had claims, it was necessary to establish a will. But as it was requisite in Chancery, for establishing a will, to have the heir-at-law before the court, it was a question to whom that title properly belonged; and so the period of gestation came to be considered. An issue was directed to try whether a child born forty-three weeks minus one day, after the husband's death, was legitimate; and it appears that the jury found this posthumous child to be the heir-at-law.

With the exception of the last-mentioned case, the question of

¹ Le Marchant, p. 292.

² Ibid., pp. 257, 291.

³ Brown's Chancery Cases, vol. iii. p. 349.

protracted gestation seems to have escaped legal inquiry for 200 years¹ before the contest for the Gardner Peerage, which excited so much interest in England, and gave rise to a very lengthened investigation.

The following were the facts of this remarkable case: In the year 1796, Captain Gardner (who afterwards became Lord Gardner) married Miss Adderley. They lived together as man and wife, until the 30th January, 1802, on which day Mrs. Gardner took leave of her husband on board ship, and shortly afterwards he sailed to the West Indies; from whence he returned to England on the 11th of July following. For some time before, and also during the whole time of Captain Gardner's absence, Mrs. Gardner carried on an adulterous intercourse with Mr. Henry Jadis. Upon Captain Gardner's return to England, he found his wife with child; and she, hoping to be delivered within the proper time, made no secret of her pregnancy. When, however, she ascertained that the child could not be brought forth in time to be supposed to be Captain Gardner's, she declared that she had a dropsy, and informed his family that such was the case; and not only Captain Gardner, but the whole of his family, considered her as laboring under that complaint. On the 8th of December, Mrs. Gardner was delivered in secret, in the presence of three persons only. The child was immediately removed to a lodging, and was afterwards christened by the name of the paramour, who brought it up, and in all respects treated it as his son. The birth of this child was carefully and successfully *concealed* from Captain Gardner, who did not even discover his wife's adultery, till the year 1803. He subsequently obtained a divorce, and married again in 1809. He succeeded to the title in 1808, and died in 1815, leaving a son by his second marriage, who in the year 1824, presented his petition to the king, praying to be entered

¹ It is hardly necessary to notice the case of *Waterhouse v. Berkeley*, tried at the Oxford Assizes, Easter Term, 1821. It was an action for damages, for criminal conversation with the plaintiff's wife. She had been delivered of a child forty-two weeks and a day after her last intercourse with her husband. Mr. Justice Park asked a witness, a medical gentleman, named Ward, whether the husband could be the father of such child? The answer was, "I have never known an instance in which it could be said it was so." The examination did not proceed further, and it was scarcely noticed by the judge in his address to the jury.

on the parliament roll as a minor peer. This was opposed by the young man, Henry Fenton Jadis, *alias* Gardner, who claimed to be eldest son of Lord Gardner, being born 312 days, or ten calendar months and nine days after Captain Gardner's departure from the country.

The petitions were referred to the committee of privileges, who called before them sixteen of the most eminent practitioners in midwifery in London and elsewhere, and examined them as to the possibility of such a protraction of the term of gestation as was here contended for. *Five* of these gentlemen maintained that the limits of gestation were fixed; and, consequently, denied the possibility of such a protraction. The other *eleven* supported the affirmative side of the question; and some of them adduced cases very strongly in favor of their views, particularly Drs. Granville, Conquest, Blundell, and Mr. Sabine. Without wishing to enter into any criticism of the medical evidence, I cannot help remarking that the gentlemen who maintained the invariable fixedness of the period of gestation, all assigned different quantities of time as that ordained by nature, and some of them who asserted forty weeks to be the ultimatum, admitted that it might be *exceeded by a few days*; now, I would ask, if the principle of extension be thus admitted, how, or by whom, can the precise limits be assigned? At the same time I must say that of the cases and arguments adduced on this occasion to prove protracted gestation, some were totally inconclusive, and others only calculated to excite a smile, from their absurdity.

The House of Lords decided in favor of the petitioner, and against the counter-claimant, Henry Fenton Jadis, *but not because of the time of his birth*; for Lord Eldon, who was their Chancellor, in giving his judgment, says, "It is not, by any means, my intention to do much more than express my conviction that the petitioner has made out his claim; that there are a great many more questions which arise in a case of this nature, almost the whole of which were considered in the Banbury Peerage; but, without entering into a detail of these questions, and *without entering into a discussion as to the ultimum tempus pariendi*, I am perfectly satisfied, upon the whole evidence, that the case has been made out."¹

¹ Le Marchant's Report of the Proceedings, &c., pp. 333, 335.

It was the *adultery of the mother* and the *concealment of the birth from the husband*, which justified the House in refusing the petition of the counter-claimant. If the only point in the case had been that he was not the son of Lord Gardner, because it was *impossible* his mother could have gone forty-four weeks with him, the House of Lords could not have declared him illegitimate; and when Lord Eldon said he should give his opinion "*without entering into the question of the ultimum tempus pariendi*," it is perfectly clear he did so for the purpose of guarding against the decision being ever taken as a precedent, that a gestation protracted four weeks beyond the usual time, should be a ground for bastardizing a child.

"The precedents, therefore," says Mr. Hargrave, in his notes on the legal time for human birth, "so far from corroborating Lord Coke's limitation¹ of the *ultimum tempus pariendi*, do, upon the whole, rather tend to show that it hath been the practice in our courts to consider forty weeks merely as the more *usual* time, (*usitatum tempus*); and, consequently, not to decline exercising a discretion of allowing a longer space, where the opinion of physicians, or the circumstances of the case, have so required."²

Dr. Tucker³ records, at some length, the opinion of the American Court, regarding the possible protraction of pregnancy; as elicited at a trial for bastardy at the Lancaster Quarter Session. In this case, the prosecutrix swore that her child was begotten on the 23d of March, 1845, and was born on the 30th of January, 1846; making the period of gestation 313 days, or one day longer than the alleged term of gestation (312 days) in the Gardner Peerage case. In the American trial six medical practitioners testified, with more or less positiveness, against the possibility of the protraction of pregnancy. On the other side five medical practitioners declared their belief in the occasional extension of gesta-

¹ "It is true that Lord Coke has regarded forty weeks as the *ultimum tempus pariendi*; but he refers to an authority which does not go to the full extent of his position, and he is also at variance with the decision of the courts in his own lifetime. These decisions allow forty weeks and ten days as the latest period."—*Le Marchant, ut. sup.*, p. lvi.

² From Hargrave's *Jurisconsult Exercitationes*, quoted in Paris and Fonblanque, vol. iii. p. 218.

³ Tucker's *Elements of Midwifery*, p. 149.

tion beyond the normal period, and in the possibility of its protraction to 313 days. In charging the jury the President of the Court held, that protracted gestation for a period of 313 days "although unusual and improbable, was not impossible;" and in accordance with this charge the jury found the defendant guilty.

In summing up my observations on this important subject, I beg to observe that I am very far from wishing to maintain a frequent deviation from the assigned or ordinary period of gestation in the human female. I am quite ready to confess, that many of the arguments brought forward in support of it have been vague and nugatory in the extreme, and several of the cases adduced totally unworthy of credit. I believe the period of forty weeks, or 280 days, to be observed with great but not invariable regularity; and having had an opportunity of observing very many cases in which mature delivery took place at or about the termination of the fortieth week, I have, after several years of attentive observation, only met with a few cases, within my own knowledge, in which the protraction appeared to be satisfactorily proved; and in these, the extension did not go beyond the fourth week at farthest; and these were cases in which the calculation was of necessity based on the time of the last catamenia; but in those cases in which the exact day of fruitful intercourse happened to be known, the greatest excess was eleven days: few, however, as these instances have been, I hold their occurrence to be decisive of the fact. I have already stated that calculations founded on the suppression of the menses alone, are inconclusive and unsatisfactory; I have therefore confined my selection of the cases adduced as much as possible to those in which, from peculiar circumstances, the time of conception was supposed to be exactly known. I wish also to observe, that conclusions drawn from the size of the child ought to have very little weight on either side of this question; for although, in some of the cases of protracted gestation the child was of enormous size, it by no means follows that it should be so in all such instances; and in point of fact, we find it expressly mentioned in some of them, that the child was smaller than usual, as happened in one of Dr. Hamilton's cases;¹ and Fodéré² says that in three instances,

¹ Practical Observations, p. 109.

² Dict. des Sci. Méd., tom. xxxv. p. 167.

in which gestation was evidently prolonged, the children were undersized and ill-thriven; while on the other hand the largest children are often produced, where no extension of the term could have taken place. In Tessier's observations it is particularly noticed, especially with regard to cows and mares, that there was no fixed relation observable between the size, strength, or sex of the offspring, and the protraction or abbreviation of the period of gestation; and of this, he gives several forcible instances.¹

As to the statements made by women themselves on subjects of this kind, experience has convincingly shown that they are but little deserving of confidence; independently of the love of the extraordinary, inherent in our nature, and the gratification arising from being thought the subject of something peculiar, their feelings are, otherwise, too much involved to allow of their judging dispassionately; so that, even where there can be no sinister motive, nor deliberate intention to falsify or deceive, we can easily understand how women themselves, and their friends, may be led into a very positive, and perfectly sincere belief of greatly protracted gestation, when, in reality, no protraction at all has occurred; menstruation becomes suppressed from some accidental or morbid cause, equivocal symptoms, apparently indicative of pregnancy, are experienced, the woman believes in, and announces her pregnancy, and, after remaining for some, perhaps several months, in this state, she does really conceive, and is thus supposed to have carried her child twelve or fourteen months, when, in reality, she had only carried it the proper time. Again, in that most strange and inexplicable condition of the system, *spurious pregnancy*, we have already seen (p. 320), that the duration of these imaginary cases is often to be measured by years, instead of months; and it must not be forgotten that, under peculiar circumstances, such as those referred to p. 286, *et seq.*, where the woman has become pregnant, but the child's situation is extra-uterine, its gestation has, in fact, continued for years, and the difference between such a case and an ordinary one is not comprehended by one woman out of every 500 who hear the fact.

¹ Mém. de l'Acad. Roy. des Sci., 1817, p. 18.

An anecdote, related by Dr. Reid,¹ forcibly and amusingly illustrates the small amount of reliance to be placed on the conclusions come to by women in their own cases, even by those whose opportunities and personal experience give them more than the ordinary means of forming a correct opinion. One of the female witnesses in the Gardner Peerage case, a midwife, and mother of seven children,² deposed that she had, on one occasion, gone ten months with child, that she was invariably right in her calculations, that she always fainted away at quickening, &c., so that she could not be deceived. This woman afterwards applied for advice to Dr. Reid, considering herself to be seven months advanced in pregnancy; the fainting had occurred as usual, the movements of the child were strong, and she had, in fact, all her former certain indications; on examination, however, it turned out that she was not pregnant at all.

The records of trials involving this question will show that the unimpeachable character of the mother has had, in several instances, no little influence, especially in France, in inducing courts of judicature to come to decisions favorable to the affirmative side of the question; and undoubtedly, excellence of moral character and conduct should ever be allowed its full weight and value; but we have so often seen those hitherto of spotless reputation and of high esteem, so sadly fall, and stray from the path of moral rectitude, that in an investigation of such paramount importance, we must be careful not to allow the prestige of character to blind us to the truth, or outweigh the teachings of experience, or the dictates of common sense.

The moral affections, especially those of grief or other depressing emotions of the kind, have been frequently adduced in explanation of great disturbances in the order of gestation; but, when we come to investigate details, our faith is greatly shaken by finding that to the one influence are attributed effects of the most opposite and contradictory character; as when in one case we find a full-grown child born five or six months after marriage or the husband's return from abroad; and in other instances, parturition

¹ *Lancet*, 1850, vol. ii. p. 78.

² See Le Marchant's Report, p. 190.

delayed for twelve or fourteen months after his departure to another world.

"Le cœur tout gonflé d'amertume
Deux ans encore après, j'accouchai d'un posthume,"

exclaims the supposed widow of Regnart in the comedy of "*Le Légataire*." It has long been remarked as a very curious coincidence, observed in so many of the cases in which gestation was protracted much beyond its usual limits, that the subjects of them should so frequently have been young widows who had been married to old men, with whom they had been childless, and that properties were so generally at stake, and dependent for their disposal on the birth of a child, without which the inheritance would pass away from the widow: this has been so often the case, that if we were to believe the statements as given to us, we could hardly resist the conclusion, that there must be a special providence in favor of young widows anxious to establish a claim to large fortunes.

The widow of a bookseller at Wolffenbuttel was delivered of a child, thirteen months after her husband's death; which child was allowed to be legitimate owing to the excellent character of the mother. The successor of this bookseller, Christopher Misnerus, who acted as shopkeeper during her widowhood, was so convinced of her purity that he married her shortly afterwards. He was also admitted as a witness in her favor before the courts; where it was contended and assented to, that her delivery might have been delayed by the deep grief in which she had been plunged for the death of her husband; and I think we may not uncharitably suppose, that had it not been for the consolatory attentions of the said Christopher, her delivery might have been delayed even much longer than it was: but it is not to be forgotten that in this case the child, if begotten by the first husband, would be heir to his property; but in the event of his dying childless it would go to his relations; so that both the widow and her dear friend had a very obvious interest in securing the legitimacy of the supposed posthumous child.

The following anecdote of Mary of England, third wife of Louis XII., who became a widow shortly after her marriage, may be looked on as affording an explanation of several of the cases

brought forward from time to time. "Après la mort de ce Roi, qui ne laissait point d'enfant mâle, le trône revenoit au jeune Comte d'Angoulême, depuis 'François premier.' La reine veuve s'étoit réfugiée à l'hôtel de Cluny, et pour accaparer la régence, faisoit courir le bruit qu'elle étoit grosse; supposition qu'elle comptoit (comme on va le voir) mener à bon terme. Mais la mère de François, l'habile Louise de Savoie, qui voyoit" (dit Brantôme) "qu'il y alloit trop de bon pour elle, et pour son fils, surveilloit avec soin les démarches de celle, qui vouloit ainsi à son détriment, jouer le rôle de rein mère. Un jour, elle fût informée par ses espions, que Marie, aussi tendre qu'ambitieuse, avoit rendez-vous vers la nuit tombante, avec Charles Brandon, duc de Suffolk. La mère et le fils, accompagnés des quatre plus grands seigneurs de la cour, surprirent les deux amans, dans un moment, qui d'ordinaire comporte moins de solennité, et exigèrent que, séance tenante, l'Abbé de Cluny célébrât dans la chapelle haute, la bénédiction nuptiale. Cette cérémonie eût lieu dans la nuit du 31 Mai, 1515. De ce mariage impromptû, naquit l'infortunée 'Jeanne Grey.'"¹

In conclusion, I beg to observe, that I should be very sorry to see, or to advocate the indiscriminate admission of the protraction of gestation, as a matter of course, or even of common occurrence; from such an admission, I feel assured, great evils might, and would almost certainly arise. I shall, therefore, avail myself of the sentiments of the reviewer of the evidence on the Gardner Peerage case, as perfectly coinciding with my own, when he observes,² that "it does not need a detail of cases to convince every man that, in by far the greater number of cases, the ordinary term of pregnancy is adhered to. Consequently, if the possibility, or probability of its being prolonged is conceded, it does not follow, that in actual practice, judgment should go upon the *general probability* of the event, as a fact in physiology. On the contrary, since in the abstract more disorder would be occasioned in society by admitting the *general principle*, as adequate to decide *special cases*, than by rejecting it altogether, we conceive that, if a definite period is not to be fixed by law, proof of the

¹ Victor Ratier.

² Edinb. Med. and Surg. Journ., vol. xxvii. p. 114.

special probability or improbability should be required in each case."

TABLE NO. 2.

13 Cases dated from Day of Marriage.

No.	Woman's age.	Last menses.	Date of marriage.	Quickening.	Labor.	Duration of gestation.	Number of weeks.
1 ¹	32	...	Sept. 3	...	May 22	261 days	} 38th week.
2	23	...	July 2	...	Mar. 24	265 "	
3 ²	29	Sept. 23	Oct. 5	...	June 30	268 "	
4	24	...	Aug. 1	Dec. 16	April 27	269 "	} 39th week.
5 ³	23	Nov. 12	Nov. 19	...	Aug. 16	270 "	
6	29	...	Nov. 30	...	Aug. 28	271 "	
7 ⁴	20	...	Jan. 17	...	Oct. 15	271 "	
8 ⁴	20	...	Jan. 17	...	Oct. 15	271 "	
9	24	...	Nov. 24, 1851	...	Aug. 22	272 "	
10 ⁵	28	...	Jan. 3	...	Oct. 3	273 "	} 40th week.
11	22	...	Oct. 25	...	July 26	274 "	
12	30	...	Feb. 12, 1848	...	Nov. 17	279 "	
13	20	Sept. 26	Oct. 1	...	July 19	291 "	42d week.

In the above thirteen cases, delivery took place—

In 38th week	2	15.38	per cent.
" 39th "	8	61.55	"
" 40th "	2	15.38	"
" 42d "	1	7.69	"

13 100.00

The average age of the women was twenty-five; and the average interval between the day of marriage and that of labor, was 272 days q. p., or thirty-nine weeks, minus one day; or, if we deduct the last case, which went to 291 days, the average interval would be 270½ days.

¹ Husband 29; symptoms of pregnancy Sept. 4.

² Symptoms of pregnancy immediately; areola developed 14 days after marriage.

³ Husband 45.

⁴ Married same day and delivered same day.

⁵ Symptoms of pregnancy January 4.

TABLE NO. 3.

Dr. Reid's 25 Cases, dating from a single Coitus.

No.	Last men- struation.	Date of inter- course.	Quickening.	Labor.	Duration of gestation.	Number of weeks.
1	...	Aug. 5	...	April 25	263 days	38th week.
2	Aug. 9	Aug. 11	...	May 2	264 "	
3	...	Feb. 11	...	Nov. 3	265 "	
4	Jan. 9	Jan. 10	...	Oct. 2	265 "	
5	July 17	July 22	Nov. 10	April 15	267 "	39th week.
6	...	Feb. 9	...	Nov. 6	270 "	
7	Jan. 10	Feb. 2	June 16	Oct. 31	271 "	
8	May 14	May 14	Sept. 10	Feb. 10	272 "	
9	Nov. 7	Nov. 12	...	Aug. 12	273 "	40th week.
10	...	Nov. 15	...	Aug. 16	274 "	
11	...	Oct. 29	...	July 30	274 "	
12	Dec. 13	Dec. 13	April 6	Sept. 13	274 "	
13	...	Oct. 8	...	July 9	274 "	41st week.
14	...	Oct. 18	...	July 19	274 "	
15	Nov. 6	Nov. 18	...	Aug. 20	275 "	
16	...	Feb. 28	19th week	Nov. 30	275 "	
17	...	April 6	...	Jan. 7	276 "	42d week.
18	Nov. 7	Nov. 18	...	Aug. 21	276 "	
19	March 14	March 18 and 20	...	Dec. 20	275 or 277 "	
20	...	July 27	...	April 30	277 "	
21	June 15	July 1	...	April 5	278 "	41st week.
22	Aug. 15	Aug. 18	...	May 25	280 "	
23	Aug. 4	Aug. 6	...	May 13	280 "	
24	March 5	March 12	July 6	Dec. 24	287 "	
25	Sept. 10	Sept. 15, 16, & 17	...	July 5	291 to 293 "	42d week.

TABLE NO. 4.

56 Cases in which the Day of Fruitful Intercourse was known.

No.	Age of woman.	Last menstruation.	Date of intercourse.	Quickening.	Labor.	Duration of gestation.	Number of weeks.
1	Sept. 30	..	May 30	242 days	35th week.
2	34	..	Aug. 31	..	May 18	258 "	
3	23	..	May 23	..	Feb. 5	258 "	
4 ^a	26	Oct. 8	Oct. 18	..	July 8	263 "	37th week.
5	27	..	Dec. 3	..	Aug. 25	265 "	
6	43	Nov. 23	June 20	..	March 14	267 "	
7	32	..	March 30	..	Dec. 23	267 "	38th week.
8	41	..	Feb. 24	..	Nov. 17	267 "	
9	..	..	Dec. 17	..	Sept. 10	267 "
10	32	..	Aug. 21	..	May 16	268 "	30th week.
11 ^a	23	..	May 27	Aug. 8	Feb. 20	269 "	
12	24	..	July 6, 1947	Oct. 20	March 31	269 "	
13	23	May 15	May 23	..	Feb. 18	272 "	39th week.
14	36	..	July 31, Aug. 3	..	May 1	273 "	
15	28	..	Oct. 10, 1851	Feb. 20, 1852	July 9	273 "	
16	25	Oct. 1	Jan. 10	..	Oct. 11	274 "	40th week.
17 ^a	25	Sept. 11	Sept. 18	..	June 19	274 "	
18	31	..	Oct. 23	..	July 24	275 "	
19	21	..	March 5	..	Dec. 5	275 "	41st week.
20	29	Oct. 21	Nov. 1 to 7	..	Aug. 6	272 to 278 d'ys	
21	31	May 24	June 18, 1843	..	Mar. 20	276 days	
22	36	..	July 23	..	April 26	277 "	42d week.
23	..	..	March 16	..	Dec. 19	277 "
24	32	..	Aug. 20	..	May 25	278 "	
25	28	..	May 6	..	Feb. 8	278 "	43d week.
26	29	Nov. 10	Nov. 11 to 17	..	Aug. 22	278 to 284 d'ys	
27	30	..	July 10	Nov. 20	April 15	279 days	
28	30	Dec. 15	Dec. 25	..	Sept. 30	279 "	44th week.
29	33	..	Sept. 23	..	June 29	279 "	
30	23	..	June 10	..	Mar. 16	279 "	
31	28	279 d'ys & 15 hrs.	45th week.
32 ^a	33	Nov. 27	Nov. 28 & 29	..	Sept. 4	279 or 280 d'ys	
33 ^a	33	..	Aug. 6 to 8	..	May 14	279 to 281 "	
34 ^a	35	..	Feb. 8, 1840	..	Nov. 15	280 days	46th week.
35 ^a	..	..	Oct. 8, 1831	..	July 14	280 "
36	..	..	April 5	..	Jan. 10	280 "
37	July 27	..	May 3	280 "	47th week.
38	25	Oct. 18	Nov. 10, 1831	Jan. 28	Aug. 17	281 "	
39	..	..	Jan. 23	..	Nov. 2	283 "
40	Jan. 8	..	Oct. 18	283 "	48th week.
41	35	..	Dec. 20	..	Sept. 30	284 "	
42	..	..	Sept. 19	..	June 30	285 "
43 ^a	Mar. 2	..	Dec. 13	286 "	49th week.
44	..	..	Nov. 9	..	Aug. 23	287 "
45	26	Feb. 20	Feb. 22	..	Dec. 6	287 "	
46	..	June 23	July 19	..	May 2	287 "	50th week.
47	..	..	Feb. 15	..	Nov. 30	288 "
48	..	..	Oct. 18, 1831	..	Aug. 3	290 "
49	Feb. 2	..	Nov. 20	291 "	51st week.
50	18	..	May 21, 1843	..	March 7	291 "	
51	40	..	March 18	..	Jan. 4	292 "	
52	April 7	..	Jan. 25	293 "	52nd week.
53 ^a	28	..	Dec. 12	..	Sept. 30	293 "	
54	..	..	July 1 to 4, '47	..	April 23, '48	294 to 297 d'ys
55 ^a	Jan. 25	..	Nov. 18	297 days	53d week.
56 ¹¹	41	..	Feb. 21 to 23	..	Dec. 21	301 to 303 d'ys	

¹ Husband 36; symptoms of pregnancy October 19.² Husband 33.³ Husband 33; symptoms of pregnancy on 19th September.⁴ Husband 33.⁵ Married on 6th, husband left on 8th.⁶ Husband returned on 9th, had connection, and died in a few minutes afterwards.⁷ Husband left on 8th of October.⁸ Husband left 2d of March.⁹ Imprisoned on 12th of December.¹⁰ Husband left 25th of January.¹¹ Husband at home only on 21st, 22d, and 23d of February.

The results of the above cases may be thus stated. Of Dr. Reid's twenty-five cases, labor occurred—

TABLE No. 5.

In the 38th week, in 4 or 16 per cent.

"	39th	"	"	5	"	20	"
"	40th	"	"	14	"	56	"
"	41st	"	"	1	"	4	"
"	42d	"	"	1	"	4	"
				<u>25</u>	<u>100</u>		

Of the fifty-six cases collected by me, labor occurred—

TABLE No. 6.

In the 35th week, in 1 or 1.79 per cent.

"	37th	"	"	2	"	3.58	"
"	38th	"	"	2	"	3.58	"
"	39th	"	"	10	"	17.84	"
"	40th	"	"	22	"	39.28	"
"	41st	"	"	9	"	16.07	"
"	42d	"	"	8	"	14.28	"
"	43d	"	"	2	"	3.58	"
				<u>56</u>	<u>100.00</u>		

And if these two collections of cases be taken together, then it will appear that, in the eighty-one cases, labor occurred—

TABLE No. 7.

Period.				Dr. Reid.	Dr. Montgomery.	Total.	Per cent.
In 35th week	.	.	.	...	1	1	1.24
" 37th	"	.	.	...	2	2	2.48
" 38th	"	.	.	4	2	6	7.40
" 39th	"	.	.	5	10	15	18.50
" 40th	"	.	.	14	21	36	44.45
" 41st	"	.	.	1	9	10	12.34
" 42d	"	.	.	1	8	9	11.11
" 42d	"	.	.	...	2	2	2.48
				<u>25</u>	<u>56</u>	<u>81</u>	<u>100.00</u>

It is quite in accordance with other laws in physiology, to believe that the period of gestation, which, beyond all doubt, is variable, may have its variations regulated by certain circum-

stances, or conditions, in the parents, or in the offspring; and so, its duration may be influenced, whether in the way of abbreviation, or extension, by the age of one parent, or of both, either absolutely, or relatively; thus, the ages of both being the same, may conduce to one particular consequence, or, being different, their influences may counterbalance each other, and so produce a modified result.

Almost all the cows served by Lord Spencer's old bull had prolonged gestations; and agriculturists say that cows which have had several calves, have longer gestations than others; but may not this happen because such cows are advanced in age?

In the human female, speaking generally, I think we find first gestations shorter than subsequent ones; but whether this proceeds from some peculiarity limited to the uterus, or from the earlier age of the woman, we have not, as yet, sufficient evidence of a conclusive kind to enable us to form a rule; I may, however, just observe that from the small Table No. 2, it appears that of the 13 cases there entered, 8 were delivered in the 39th week, being equivalent to 61.55 per cent.; while in Table No. 5, the proportion delivered in the same week was only 20 per cent., in Table No. 6, 17.84 per cent., and in Table No. 7, 18.50 per cent. But, on the other hand, No. 50, Table 4, was a first gestation in a girl of 18, and she went 291 days, while No. 6, in the same table, was a woman of 43, and her gestation lasted only 267 days; and the tables will supply other examples of a like want of correspondence to any such rule as would affirm that the duration of human gestation is directly proportioned to the age of the woman.

ON THE
SIGNS OF DELIVERY.

ON THE
SIGNS OF DELIVERY.

AN investigation into the proofs of delivery, whether undertaken with reference to circumstances of a social, professional, or legal nature, although not so frequently required, will be found no less important in its relations to society, nor less difficult in its details, than the examination of the proofs of pregnancy, a very clear and accurate knowledge of which latter is indispensably necessary to enable us to arrive at a satisfactory conclusion, when engaged in such an inquiry as that before us. It may, and indeed frequently does happen that a woman with an enlarged belly, arising from some purely accidental or morbid cause, becomes an object of suspicion, and afterwards the sudden reduction of her size may, however unjustly, affix upon her the imputation of clandestine delivery, at least; and, although such charge may never be made the subject of a legal or criminal investigation, its influences would be alike unjustly prejudicial to the character of the individual, and injurious to the moral interests of society. The writer once saw such an instance in the case of a woman who was separated from her husband, and became affected with what was considered ovarian dropsy, which enlarged the abdomen to the size of six months' pregnancy, some of the other symptoms of which state were also present. After an attack of inflammation, during which, it is to be presumed, the parietes of the tumor formed an adhesion with the upper part of the vagina, there took place suddenly a discharge of gelatinous fluid from that canal, and the abdomen completely subsided in the course of a day, and the previously entertained suspicion appeared to be confirmed beyond a doubt; but, on examination, the woman had not about her one of the signs of delivery; yet,

had not the case been at once investigated, loss of reputation, at the least, would have inevitably, though most undeservedly, followed.

In a very interesting case related by Fodéré, the life of an innocent woman was very near falling a sacrifice to the law, under circumstances somewhat similar. A young woman had her menses suddenly suppressed in consequence of a fright, and sought every aid to restore them, without effect; she was at length married, with a view to induce their return, which succeeded after a time, and she discharged a great quantity of fetid matters. This fact was proved by the husband and the medical attendants. It so happened, just at this period, that two children were found exposed and destroyed by cold; suspicion fell on this young woman, because she was known to have had an enlarged abdomen, which had very suddenly subsided. The judges of the district ordered her to be arrested, and examined by a physician, a surgeon, and two midwives, who reported that they had discovered marks of delivery. In consequence of this, the unfortunate woman was condemned to death, for concealing her pregnancy, and making away with her children. An appeal, however, was made to Parliament against this sentence, and, in consequence of two consultations, held by several physicians and surgeons of the greatest eminence, she was acquitted.¹

In the celebrated case of the Demoiselle Famin, published at Berlin and Paris by Valentin, in 1768, a charge of pregnancy and infanticide was erroneously instituted in consequence of an extreme case of ovarian dropsy.

Delivery may be *concealed* with the hope of avoiding shame, or, still more criminally, with the intention of destroying the offspring; and, where infanticide is charged, the law requires proof of delivery, and the finding of the child. Or, again, delivery may be *feigned*, for the purpose of obtaining marriage with a paramour, to gratify the wishes of a husband, or to wrest property from the lawful heir. Perhaps the most singular case of the kind on record is that related by Capuron,² in which a young woman, with a view to obtaining marriage with her lover, feigned preg-

¹ Médecine Légale, tom. i. p. 476.

² Méd. Légale relat. aux Accouchemens, p. 110.

nancy and then delivery, and, so far, succeeded completely in her attempt; but, after some time, being called on to produce the child, and refusing to do so, she was accused of infanticide, and brought before the criminal tribunal, where she confessed the fraud which she had practised, and the motives by which she had been actuated; but she was then called on to prove that she had never been delivered, and an investigation by medical examiners was ordered; the result of which was a report, that they could find no sign of delivery of either recent or ancient date; whereupon she was acquitted and discharged. A similar instance of pretended delivery appeared some years since in a Berlin journal, as having occurred at Sirakovo, in the circle of Posen, where a young woman, anxious to fulfil the ardent desire of her husband to have an heir, pretended to have been suddenly and unexpectedly delivered, and stole an infant to support the falsehood: the case was rendered more atrocious, from the real mother having, in consequence of the theft, been subjected to the accusation of infanticide; the fact was, however, happily discovered, and the culprit consigned to the punishment due to her crime.¹

Dr. Male tells us² that a surgeon was called to a pretended labor, and a dead child presented to him, but there was no placenta; he therefore proceeded immediately to examine the woman, when he found the os uteri in its natural state, nearly closed, and the vagina quite contracted: the fact was, that the woman had never been pregnant, and the dead child was the borrowed offspring of another: it appeared that she was induced to practise the artifice to appease the wrath of her husband, who frequently reproached her for her sterility. The following case occurred under my own observation: A young woman was admitted into Sir Patrick Dun's Hospital, affected with anasarca and dropsy in an extreme degree, which she attributed to hardship sustained in her passage from Edinburgh, where, she said, she had been delivered, about seven weeks before, of a child, which only lived two days; she sunk rapidly, and died within a few days. In the expectation of obtaining a specimen of the corpus luteum at that interval after delivery, I obtained the

¹ See Paris and Fonblanque, vol. i. p. 250.

² Medical Jurisprudence, p. 212.

uterus and appendages for examination through the kindness of Dr. Law; when, very much to my surprise, I found that there was not, in either ovary, the least appearance of a corpus luteum; and on extending my examination to the uterus itself, I found it presenting, both in form and size, completely the characters of the virgin uterus; with an os uteri so small, that it would not receive more than the head of an ordinary probe, and its margins perfectly smooth, and without the least appearance of notch or depression; which circumstances, conjoined with the unaltered state of the breasts, induced me to give it as my opinion, that it had never contained a full-grown child, and certainly not within the period stated by the woman. As this excited some curiosity about the case, an inquiry was made of her husband and other friends, who were all of opinion that she had never been pregnant; but it appeared that, having become dropsical before she went to Scotland, she mistook her condition for pregnancy, and, not wishing to acknowledge her mistake, or dreading ridicule, she had persisted in her account, after her return.

With reference to whatever object this inquiry may be entered on, it is very important to consider, *in limine*, what are the limits of time within which the signs of ordinary delivery, without physical injury, can be detected; and also, whether a woman who has given birth to a child, necessarily retains any permanent mark, or symptom, by which her delivery can be ascertained after an interval of many months or years. With regard to the first of these questions, it must be recollected, that there is a remarkable diversity in the effects produced by parturition on the system of different individuals, as well as in the merely physical changes made in the condition of the parts more immediately concerned in that process: a difference arising, partly from the greater strength or tonicity in the constitution of particular persons, and the consequent rapidity with which the parts restore themselves to their original state; and, partly depending on the period of pregnancy at which delivery took place, and the size of the ovum or foetus which has been expelled. As a general rule, however, it is agreed on, by all who have directed their attention carefully to the subject, that the time within which we may expect satisfactory information, has certainly expired when ten days have elapsed from the time of delivery; but, we are not

to assume this extension of the time suited for the inquiry, as implying that we may safely postpone our examination so long, or that up to the end of that period, we can obtain all the evidence we require: such is by no means the fact, and experience will soon convince us that, in general, within a week, the condition of a healthy woman who has not sustained any accident in delivery is so restored as to render the result of any such investigation a matter of much uncertainty; many of the most marked alterations in the parts of generation disappearing, "so as to leave no trace remaining, eight days after delivery."¹ Such, also, was the opinion of Bohn and Albert, in conjunction with Antoine Petit and Louis, when they met in conference on the case of a woman of Mantes, who was accused of infanticide, and whom they pronounced innocent, on the grounds of her not having been examined, as to the fact of her delivery, until after the expiration of a month. "Dans quelques cas," says Devergie,² "l'accouchement ne laisse aucune trace de son passage, après le sixième jour revolu."

I was once called on to examine a woman, five days after delivery, at the full time, and was particularly struck with the degree in which the parts had restored themselves to their natural condition; especially the os and cervix uteri, which hardly differed from their natural unimpregnated form and size. It should, however, be remarked, on the other hand, that occasionally, under peculiar circumstances, the symptoms of a recent delivery may be found very distinct, after the lapse of more than ten days; as, for instance, after a very severe labor, and perhaps the birth of a very large child, by which great distension, contusion, swelling, laceration, or sloughing may have been produced in the soft parts.

If, on the other hand, the contents of the uterus have been prematurely expelled, the signs of delivery, at whatever time investigated, will be found indistinct in proportion to the immaturity of the ovum; so that, after abortion at an early period, so little change is made in the condition of the uterus, and other

¹ Baudelocque, vol. i. p. 115. See also Fodéré, tom. ii. p. 17. Marc, Dict. de Méd., tom. i. p. 228.

² Médecine Légale, tom. i. p. 444.

genital parts, and the woman may exhibit, otherwise, so few of the signs of pregnancy, even when examined within a day or two after the occurrence, that it may be found impossible to form anything approaching to a decided opinion,¹ except by a very careful examination of whatever substance may have been expelled, should that be within our reach; when, if the structure of the ovum be satisfactorily detected, and we have sufficient proof that such body was expelled by the woman, there can no longer be any doubt. In the case of a lady who miscarried, with little or no pain, but with considerable hemorrhage, at the close of the second month, in twenty-four hours afterwards I found the os and cervix uteri almost completely restored to their natural state; the vagina and external parts hardly, if at all, dilated, and very little relaxed; the breasts exhibited very imperfectly the appearances which accompany pregnancy, the ordinary sympathetic symptoms of which had been almost entirely absent. Now, in such a case as this, it would be utterly impossible to arrive at more than a very ill-established probability, except by finding the ovum, which, in this case, was expelled entire and perfect, in which state I have preserved it. As a general rule, we should, in all cases, if possible, see the child, and having carefully examined it and its appendages with the precautions suggested pp. 313, 414, we should consider whether its development and other conditions correspond, first, with the account given us; and secondly, with the signs observable in the female under examination.

Whether the child produced be really that of the woman may be determined by moral evidence; but to this alone, we should hardly feel justified in trusting, and should endeavor to obtain every possible species of information. A circumstance which occurred in London, in November, 1822 (see *Morning Chronicle*, November 23d), offers a good illustration of this. A girl was apprehended for suspected infanticide, and her child carried to a neighboring workhouse, till the inquest should be held upon it. A surgeon, who examined the body two days after delivery,

¹ "Avant les deux premiers mois revolus de la grossesse, surtout lorsqu'il ne s'agit pas d'une primipare, l'art ne présente aucun moyen concluant de déterminer, par l'examen de la femme, si un avortement a eu lieu."—Marc, *Dict. de Méd.*, vol. iii. p. 193.

declared that there were no marks of external violence, and that it was in such a state of putrefaction as rendered an internal examination useless and unnecessary. The jury were accordingly on the point of returning their verdict, *found dead*, without surveying the body, when the coroner reminded them of this part of their duty. On proceeding to view it, they discovered that the body examined by the surgeon, was that of a child who had died five or six days before, in the workhouse.

Fodéré says, that in consequence of mistakes of a similar kind, women who had miscarried at an early period of pregnancy, were declared the mothers of children born at the full time, and actually suffered death in consequence.¹

As to the second point, or our being able to ascertain, by personal examination, whether a woman has at any former period, been delivered or not; it is plain, that we may be able to establish the negative of the question from the existence of some physical condition, such as a perfect hymen, which would be incompatible with the birth of a mature child; this would not, however, prove that abortion had not taken place (see p. 299); but such a state of imperfect development, or of imperforation might be discovered, as would preclude altogether the notion of either pregnancy or delivery. But the question of most practical importance is this: supposing a woman to have been a mother, does there remain any mark, or sign, by which the fact of delivery can at any future period be established? The reply to this question, which experience warrants, appears to be, that in a very great majority of cases, we should be totally unable to discover any such certain indication of a former delivery; for although, in some instances, there are to be found appearances which point strongly to a probability of such an occurrence having taken place, they are very seldom, indeed, such as ought to be considered decisive of the question; while in other cases, where parturition has occurred repeatedly, not one of the signs usually insisted on is found to have continued permanent. I some time since examined a patient who had borne five children, and nursed three of them, the youngest being then five years old; the breasts were small, but neither flaccid nor pendulous; the nipples short, with not the

¹ See Edinb. Med. and Surg. Journ., vol. xix. p. 457.

least shade of brown color in the areolæ, which exhibited only the delicate rose tint so often observed on that part of the virgin breast; there were neither lines, nor spots of any kind on the abdomen;¹ the os uteri was small and natural; the vagina contracted, and the fourchette perfectly entire. It should be mentioned, that this lady never carried her children beyond the end of the eighth month. But the remarkable case of Aimée Perdriat, related by Fodéré,² shows very forcibly, that the lapse of a few weeks may be sufficient to render impossible the detection of the signs of delivery. The facts were briefly these: On the 11th of June, early in the morning, Aimée Perdriat left her master's house, and went to that of a friend named Rosina, living in the fifth story of the house, begging permission to lie down, as she was unwell with colic; in about an hour afterwards, a person living in the third story, heard an extraordinary noise in the water pipe, as if a heavy body was falling forcibly through it.

Aimée was not visited by any one, except Rosina and another young girl, who came to ask if she wanted anything. About five hours afterwards, Rosina observed blood on the stairs and on the floor of the room, and Aimée remarked, that her menses were flowing very profusely. Suspicion was excited, and on the 17th, the privy was opened, when a child, placenta, and two bloody cloths, were found. Two surgeons examined the body, and reported that there were no marks of violence present, except that the umbilical cord was *torn* off; that it was a full-grown child, who, in their opinion, had breathed after birth, and had fallen alive into the place from whence it was taken. Aimée was arrested on suspicion of being the mother of this child, and the suspicion was increased by her refusing to submit to the examination of a midwife, and having absconded from Paris: she was brought back, and on the 15th, 17th, and 27th of July, being more than a month after the supposed delivery, she was examined by Baudelocque, Dubois, Ané, Dupuytren, and Lafarge, who declared that they could not discover any signs indicative of delivery having taken place at the time in question. In consequence of this, she was acquitted, the judges leaning to the side

¹ For a similar case see Morgagni, epist. xxiii. art. 4.

² Médecine Légale, tom. ii. p. 18.

of mercy; but the circumstances of the case must impress us with a very strong moral conviction of the woman's guilt.

The presence of broken streaks, running in nearly concentric curved lines, of a shining white, or sometimes pearly color, most numerous on the lower part of the abdomen, and sometimes observed on the nates and upper part of the thighs,¹ like the remains of numerous small cicatrices, the surface of which seems reticulated, or as if the texture of the skin had been frayed, is a sign of acknowledged value. These marks are produced by the giving way of the true skin, under the distension caused by the enlarged uterus, and when once formed, are permanent; but then, we have already seen (p. 469), that a woman may have been repeatedly delivered without the formation of any such marks; and on the other hand, we know, that any cause capable of stretching the abdominal integuments to the same degree may equally give rise to their production; a remarkable instance of which the writer once saw in a man laboring under general dropsy, whose abdomen was literally covered with such streaks; and there were also, several on the thighs, prepuce, and other parts of the body. Denman says,² that the same effect may also be occasioned by extreme corpulence. These marks are sometimes accompanied by a brown line, extending from the pubes to the umbilicus, around which there is occasionally formed a colored areola; both of which, and their mutual relations, I have already fully described as indications of existing pregnancy (see p. 142), so that at the present moment, I shall only add, that when these are formed during pregnancy, their color, especially that of the central line, becomes much darker soon after delivery, in consequence of the tension of the integuments being removed, and their fibres being thus more closely approximated; while, at the same time, and owing to the same causes, the disk of the areola is diminished in circumference, and the dark line rendered narrower; this deepening of the shade of color is most remarkable two or three days after delivery; but, as formerly stated, there are other states of the system, besides pregnancy, capable of producing the colored line, which I will notice in a future paragraph. (See p. 484.)

¹ Vide Desormeaux, *Dict. de Méd.*, tom. x. p. 338, and Devergie, *Médecine Légale*, tom. i. p. 443.

² *Introduction to Midwifery*, 5th ed., p. 244.

It happens, also, especially in young women of a full habit, that when the breasts have been greatly and rapidly enlarged during pregnancy, or after delivery, the skin covering them is injured, and silvery lines are formed, which never afterwards disappear. I have already (p. 87), related the particulars of a case, in which I discovered, by the presence of these marks, a delivery which had taken place two years before; and subsequently, in consultation with the late Surgeon Conolly, on a case of doubtful pregnancy, where previous child-bearing was at first resolutely denied, the recognition of these silvery streaks induced me to press the party strongly on the subject, when she confessed she had given birth to a child nineteen months before. It is very important to know, that these streaks may form on the skin of the breast *during pregnancy* (see p. 99), as well as after delivery, for, otherwise, we might be led into serious error, and conclude in a case of first pregnancy, where they happened to be developed during gestation, that the woman had been delivered before; but I have now seen a sufficient number of instances to convince me that they unquestionably form, in some cases of first pregnancy, so early as the fifth month; in a case of peculiar interest (see p. 310), I saw these lines distinctly formed on the 17th of August, where the last menstruation preceding conception had taken place on the 18th of March, so that they cannot be placed absolutely among the signs of a former delivery, as is done by Roederer, who regards them as the effect of the turgescence of the breast from the secretion of the milk after delivery, and consequently, proofs, that the woman "*jam partum enixa est*;" but they must certainly be regarded as the result of pregnancy. I should add, that the abdominal lines also form, occasionally, as early as the sixth or seventh month of gestation, though I believe this to be rare.

It may be satisfactory to inquire here, whether there is any other affection of the mammæ which might give rise to such a condition of their surface. The mere accumulation of fat, I certainly think, would not, and the existence of diseased enlargement would not be likely to give rise to mistake; there is one fact on this subject which deserves to be borne in recollection, namely, that the application of leeches to the breasts, or other

¹ Elem. Art. Obstet., pp. 38, 40.

means of exciting mammary irritation, such as sinapisms, for the purpose of restoring the menstrual discharge, as recommended by Dr. Loudon,¹ Dr. Patterson,² and others, has been followed by these organs becoming "swelled to an enormous degree;" and as this swelling takes place very rapidly, it seems reasonable to suppose, that it *might* produce a similar disorganization of the integument; but I have no evidence from experience on the subject; neither have they been observed in the great enlargements of the breast from hypertrophy, as described by Dr. Fingerhuth.³ As yet, I have never seen them, except as the result of pregnancy, which, however, they do not always, but only occasionally accompany or follow. On the whole, we may conclude that if, on investigation, it can be satisfactorily ascertained that no such morbid or accidental alteration as those above alluded to, had ever existed in the situations in which these cracks are perceived, then their presence would establish a presumption in favor of former pregnancy, amounting almost to certainty; and should we happen under similar circumstances, to find these peculiar marks on the breasts and abdomen at the same time in a woman not then pregnant, or before the fifth month, the coincidence would afford a concurrent testimony which ought to leave no room for doubt.

Notice has been already taken (p. 234) of the frequent occurrence of varicose veins in pregnant women; in such cases, as well as in some others where that affection has not existed, dark purple spots or vermicular lines form on the limbs of women who have borne several children; but their presence or absence does not, in my opinion, afford us any information on which we could venture to rely, except as a collateral item, to be taken in conjunction with several others; for, although their appearance is peculiar, and I have very often seen them in women who have had families: it is to be recollected, that a woman may have varicose veins independently of pregnancy; and as far as I know, we have not sufficient evidence from experience to warrant us in believing, much less asserting, that such marks may not be found

¹ Edinb. Med. and Surg. Journ., vol. xxxviii. p. 61.

² Dub. Journ. of Med. Sci., vol. iv. p. 193.

³ See Dub. Journ. Med. Sci., vol. xi. p. 245.

independently altogether either of pregnancy or varicose veins; and on the other hand, the purple marks observable after varicose veins are, in many instances, not discernible when a considerable time has elapsed after delivery.¹

When the os uteri of a woman who has borne children is examined, its labia are in general found jagged, fissured or notched (see fig. 1, p. 151), and sometimes as if a portion had been torn, and remained separated from the rest: I attach great consideration to this state of the part, because it is not likely to be produced by the expulsion of any accidental formation from the cavity of the uterus. I have elsewhere² recorded one case and seen others of a very large polypi expelled with great difficulty by women who had never been pregnant, and in whom there was not any trace of notch or fissure afterwards observable; still I cannot but regard such an occurrence as possible; but speaking from actual experience I have never met with it, except after childbirth; nor do I believe, that it is ever the natural original condition of the uterine orifice.

Røderer considers this state of the os uteri³ as furnishing a "signum indubitatum partus jam editi." Schmitt describes this notched state of the labia oris uteri, as occurring in a girl who was supposed not to have been previously pregnant; and from this fact, takes occasion to discredit this condition of the orifice as a sign of previous delivery; but this young woman confessed that she had incurred the risk of pregnancy, so that we may reasonably suppose that her case did not in all probability form an exception to the accuracy of this diagnostic sign.⁴ Schmitt subsequently relates the case of a widow,⁵ who had lived several years with her husband without having any child during the

¹ Røderer, speaking of the signs of delivery, enumerates as one, "Maculæ femorum crurumque cœruleæ, ex gravidarum varicibus natæ, per plures annos, si ampliores fuerint varices, subsistunt."

"Varium maculæ post plures annos disparent, et in multis feminarum, cum ipsis varicibus, totæ desiderantur."—*Elem. Art. Obstet.*, pp. 40, 41.

² *Dub. Journ. of Medicine*, Feb., 1851, p. 52.

³ "Interim præterea labiorum margines sunt inæquales, tanquam incisionibus notati, et cicatricibus fuerint."

⁴ *Researches on Cases of Doubtful Pregnancy*, 1st div., case 17.

⁵ *Ibid.*, case 33.

time, and had the cleft state of the os uteri; but he afterwards discovered that she gave birth to one before her marriage. But the converse of this will not hold good; the unfissured state of the uterine orifice will not be sufficient proof against the former occurrence of childbirth; for a woman may have been delivered even of full-grown children, without the production of this change in the os uteri, or only in a trifling degree; or if a considerable time has elapsed, this part may not retain any alteration that would enable us to detect the fact; and this observation will, of course, apply still more strongly to cases of abortion or premature delivery; under such circumstances the orifice may present nearly, if not completely, the characters of its virgin condition.¹ The value of the evidence to be obtained from a lacerated state of the perineum will be fully considered presently.

Before proceeding to investigate in detail the present circumstances of any case submitted to us for examination, we should endeavor to possess ourselves as fully as possible of the previous history of the woman, if that be not already known to us; which may have been, on the one hand, such as would greatly tend to render probable the occurrence of delivery, or, on the other hand, to diminish, or perhaps altogether forbid our belief in its possibility. We may, for instance, learn that she had been for several months observed to be increasing in size and exhibiting other symptoms of pregnancy, previous to the time at which delivery was suspected to have taken place; or we may have reason to know that she had been long laboring under some form of disease, which, while it rendered the occurrence of pregnancy extremely improbable, was at the same time such as would be likely to induce many of its symptoms. The age, also, of the individual may be such as would tend greatly to confirm us in a negative opinion; and even supposing that we are satisfied that conception had occurred, this may in no measure facilitate our investigation, but may, on the contrary, involve us in further difficulty. It has been already shown that a woman may be pregnant, and that the fruit of her womb may be blighted at any period, but may be re-

¹ For an elaborate description of the differences observable between the os uteri of the nullipare, the primipare, and the multipare, see a paper by M. Marc d'Espine in the *Arch. Gén. de Méd.*, for April, 1836.

tained in utero until the full time is accomplished, while the size of the abdomen happening from some other accidental cause to continue increasing until the expulsion of the degenerated ovum occurs, the woman may be suspected of having brought forth a child; nay, it may happen, however paradoxical such an assertion may at first sight appear, that pregnancy and utero-gestation, even when their full term has been nearly accomplished, and the life of the foetus distinctly recognized, are not necessarily followed by the birth of a child; as is proved by the facts of the following very remarkable case, which I saw some years ago, 12th February, 1830. Mrs. C., of Charlemont Street, became pregnant for the fourth time, and up to the seventh month matters went on favorably; but after that time she ceased to feel the motions of the child, which had been previously very active; she, however, continued to increase in size up to the end of the ninth month, and when I saw her, she was supposed to be in labor of a full-grown child.

A week before my seeing her, the membranes, as I was informed, protruded without any previous pain, and being ruptured gave issue to a large quantity of dark and fetid fluid; but no labor action succeeded, nor could any presentation be felt. Matters so continued for three days, without any uterine action, but with abundance of very foul discharge. The *secale cornutum* was then administered, which produced, or at least was followed by violent excitement and fever, but no uterine action ensued.

She now became flushed and feverish, and the pulse rose to 140, the tongue became foul and dark, and the fetid discharge continued. Her state when I first saw her, a week after the rupture of the membranes, was this: The face flushed, but expression good, tongue foul and rather dark, pulse 120, discharge from the vagina *horribly offensive*, abdomen swelled, but much softer, and less in size than it might be expected to be at the full period of pregnancy; amazing tympanites, no tenderness except in one spot at the left side.

On examination per vaginam, no presentation could be felt, but near the os uteri was a substance which I thought was the foetal surface of the placenta; a careful examination of the abdomen, externally, failed to detect any trace of the body or limbs of a child; and I expressed an opinion, that there was no child then in the uterus; to determine this, however, and also to

evacuate more speedily the foul fluid which was issuing from the uterus, and to give exit to the air which seemed to be contained in its cavity, I proposed the introduction of the long gum-elastic tube of a stomach-pump; this was done; no child could be felt, but very nearly the whole length of the tube was admitted into the uterine cavity, showing the greatly distended state in which the organ was. During the introduction of the tube, foul fluid and great quantities of an abominably fetid gas passed out through it; to favor their escape, I compressed the abdomen, in all directions, and with considerable force, which gave the patient no uneasiness. The abdomen now subsided very much, and allowed a more accurate external examination; by which I could trace the outline of the uterus still as high as at the seventh month; but no trace of a child, nor of any solid substance, except low down at the left side, where there was felt a hard uneven lump, pressure over which gave pain; this I afterwards ascertained to be a heap of foetal bones in the uterus, which continued to be expelled, from time to time, during the remainder of the lady's life, which lasted only about two years and a half. In a few days after my first visit, the placenta and cord came away completely macerated, and all the interstitial matters so completely removed as to present a most perfect, ready-made preparation of the umbilical, or placental vessels, even to their most minute capillary terminations; in which state it is still preserved in my museum.

Morgagni quotes from Nebelius a case strikingly analogous to the above; it is that "of a mature foetus, which was endeavoring to procure its own discharge, at the proper time; but, after the efflux of the waters, gave the more certain signs of its death, as in the following weeks a fetid and bloody ichor, with little pieces of membranes and fleshy fibres, flowed from the pudenda; and finally this foetus was reduced to a skeleton, so that the crackling of the bones was heard as often as ever the woman bent her body backwards or forwards; yet she, being afflicted with no fever that is mentioned, nor any other considerable inconvenience, had even carried those bones in the uterus for three years together, without any loss of health."¹ There is another case of decomposition of

¹ Epist. xlviil., art. 42. In the *Veterinarian* for May, a very remarkable case of the same kind is related as having occurred in a cow: quoted in the *Lancet* for May 6, p. 225.

the child in utero mentioned in the *Lancet* for Dec. 22d, 1838. Such cases appear to me sufficient, in themselves, to demonstrate the imperfection of the rule of law concerning concealment of birth, in order to prove which, it is held sufficient to ascertain that there has been a pregnancy, or a delivery; for in those cases pregnancy was clearly ascertained, the motions of the child were strongly felt, and the full term of gestation was accomplished, yet no child was born.

It has already been suggested (pp. 81, 323, 374), that a woman may conceive, and yet not become with child; so here it appears that pregnancy may exist with a living child for several months in the womb, of which the mother may not be delivered, and yet not continue truly pregnant. These cases, viewed in conjunction with two others formerly related (p. 108), forcibly confirm the truth of a remark there made, viz., "that a woman may expel parts of a foetus, or portions of an ovum, without reproach, under circumstances which would, at first sight, imply a departure from virtue," and here also a remark of Devergie's finds its practical application, when he says that although "il sera presque toujours possible d'affirmer, qu'une femme n'est jamais accouchée; l'on ne pourra pas toujours assurer, qu'une femme n'a jamais été enceinte."¹ I wish also here to recall attention to a class of cases of which that formerly related (p. 286) as occurring in Cork Street Hospital may be taken as a specimen, in which a woman carried a full-grown child in the cavity of the abdomen for eight years, during which time she gave birth to three other children. Such cases show us that it is quite possible for a woman to have a child in her abdomen without being pregnant, in the ordinary sense of the term; but this consideration may be of no small importance in preventing undeserved deterioration of character; for let us suppose a woman, so circumstanced, to become a widow, and so remain for a year or two, and then dying, there is found in her abdomen a full-grown child;² would not a conclusion be most probably arrived at which would do her memory a great injustice?

It may also be observed here, that should such a case as that

¹ Médecine Légale, tom. i. p. 157.

² See Dub. Journal Med. Sci., vol. ii. p. 137.

of Mrs. C. give rise to the suspicion of infanticide, the accusation could not be sustained, because, in order to do so, the existence of the child must be proved and its body found; and in suspected cases, whether of *concealed* or *feigned* delivery, we should very carefully examine the child, if possible, for the purpose of ascertaining whether its state corresponds to the supposed or pretended time of delivery, and to the other circumstances of the case; as, by so doing, the attempted fraud may sometimes be at once detected. If, for instance, a woman feign to have been delivered two or three days before, and produce as her own, a child with the cord separated and the umbilicus quite healed: or, on the contrary, if the delivery be asserted to have taken place a month before, and the cord be found still attached to the navel, such incongruities would be so far decisive against the truth of the woman's account. Other discrepancies, such as want of correspondence between the development of the child and the period of pregnancy accomplished, or the interval after delivery, will readily suggest themselves, and ought to be very carefully attended to.

Having made these general observations, we have next to consider, in detail, the individual signs, by an examination of which we may be enabled to form an opinion as to the recent occurrence of delivery, when such inquiry is instituted within a proper time after parturition is supposed to have taken place.

1. The face is generally a little paler than usual, the eyes are somewhat depressed, and not unfrequently surrounded by a slightly brownish circle, and the whole expression of the countenance resembles that of a person recovering from a slight indisposition; the pulse is, in general, more or less accelerated, the skin softer and warmer than usual, and relaxed with a moisture, which has, in many, a peculiar and sometimes very unpleasant odor.

2. The state of the breasts, and their secretion, ought to be a subject of particular attention, especially if examined about the third or fourth day after delivery; at which time they are generally full, tense, and hard, or even knotty under the hand, and if pressed, or drawn, they yield either a lactiform fluid, or perfect milk; the nipples appear turgid, and the areolæ dark, and otherwise altered, as already fully described Chapter IV.

The fluid first secreted by the breasts, *i. e.* within the first two or three days, and which is called colostrum, differs remarkably in its qualities from that which is subsequently secreted. It is of a decided yellow color, thick, tenacious, and ropy; at first, it coagulates by heat, acids, and alcohol; has a specific gravity of 1.072, while that of the fully formed milk is 1.032, and contains a larger proportion of salts:¹ examined under the microscope, it exhibits some true milk-globules, which are generally irregular in form; along with these are seen a very large number of fat-globules, some of which are larger than those in ordinary milk, and are frequently observed clinging together in masses; besides these, there are granulated, yellow, roundish corpuscles, larger than the milk corpuscles, which appear to be composed of very minute fat-vesicles. These were first observed by Donné, who states, that they occur in woman's milk until the twentieth day, when the milk loses all the characters of colostrum: Simon never succeeded in detecting them after the eighth or tenth day; according to D'Outrepoint, they usually disappear on the third day. Dr. Peddie says, the changes in the colostric bodies go on in general until about the tenth day; but sometimes for three weeks before the milk acquires its normal characters. Simon gives the two following analyses,² in order to contrast the composition of colostrum with that of healthy, fully formed milk:—

	Colostrum.	Healthy Milk.
Water.	828.0	887.6
Solid constituents	172.0	112.4
Fat	50.0	25.3
Casein	40.0	34.3
Sugar of milk	70.0	48.2
Ash	3.1	2.3

But these points of difference, and the exact limits of time within which they are observable, do not appear to be sufficiently constant, nor as yet established by experiment with sufficient accuracy to warrant us in laying much stress on them in a judicial examination.

3. The abdomen is full, its integuments greatly relaxed, or

¹ See Berzelius, *Traité de Chimie*, &c., tom. vii. Desormeaux and Orfila, *Diet. de Méd.*, tom. xii. pp. 554, 572.

² *Animal Chemistry*, vol. ii. p. 50.

even thrown into folds, especially in those who have borne several children; the skin is remarkably movable on the subjacent muscles, and occasionally the muscles are found separated along the median line (see p. 23); and we recognize those light-colored broken streaks or cracks already mentioned, which are generally most numerous from the groins and pubes, towards the umbilicus, which is often found projecting, and of a conical form; and in some instances, as already described, surrounded by a dark-colored areola; with a line of similar hue running along the middle of the abdomen, especially in women of dark hair and strongly colored skin (see p. 142). If the hand be pressed firmly over the lower or pubic region, we feel:—

4. The tumor produced by the volume of the imperfectly contracted uterus, which is felt, when examined within a day or two after delivery, nearly as large as the head of a new-born child, and rising three or four inches above the brim of the pelvis, into the cavity of which it can be traced by the hand, and lying towards one or other side.

5. The state of the os uteri, vagina, and external parts, next claims our attention. By an ordinary examination per vaginam, and still more decisively by the introduction of the uterine sound, we detect the enlarged state of the uterus, and its identity with the abdominal tumor; and, at the same time, we ascertain the condition of the os uteri, which, in a recently delivered woman, is found gaping open, so that two or three fingers might be introduced into it with ease; its margins are flabby, and very much relaxed, and not unfrequently feel as if divided by several small fissures; and if seen by the speculum, as observed by Dr. Simpson, the *appearance* of this part presents such striking peculiarities as to make it almost impossible to confound it with any morbid condition.¹

If the examination happens to be made within a few hours after delivery, the patulous state of this orifice is such that its margins cannot be distinctly recognized, so that we feel at a loss to distinguish between it and the cavity of the vagina, of which it seems as if it were a continuation. This latter part, also, is greatly relaxed and dilated, in consequence of which, its internal

¹ Obstetric Works, vol. i. p. 68.

surface is rendered smooth, its natural rugæ being obliterated by the recent distension of its tissues. From the same cause, also, the external parts are swollen, not unfrequently contused, or even torn, especially after a first, or a difficult labor, and partake of the relaxed state of the internal parts; there is, also, found issuing the peculiar discharge to which we apply the name of lochia.

6. Laceration of the perineum. When a woman, for the first time, gives birth to a full-grown child, it frequently happens that the thin fold of integument constituting the anterior edge of the perineum, and called the fourchette, is torn; and sometimes the rent extending further backwards, divides the proper substance of the perineum, to a greater or less extent; this, however, is merely a contingency, which may or may not take place, and is, in fact, of rather rare occurrence, except in first labors, and in the simpler form first mentioned; but if recognized in the greater degree, is a very strong proof of delivery having preceded.

7. The lochia. From the time of delivery, a sanguineous discharge is eliminated from the genitals, and continues to flow for a period varying between four or five days, to as many weeks, according to the peculiar habit or constitution. In general, the discharge continues red for the first three or four days, and then becomes nearly colorless, or acquires a slightly brownish, or dirty greenish hue, from which it is sometimes vulgarly called *green waters*, and after a week or eight days it ceases altogether. In some, it does not continue red for more than a day or two.

This fluid has a peculiar odor,¹ not easily named, which distinguishes it from menstruation, leucorrhœa, or morbid discharges. Loder compared it to the smell of "fish-oil;" others speak of it as a sour smell; but any one who has been much about lying-in women, especially in the wards of a lying-in hospital, must be aware of the peculiarity of this *odor gravis puerperii*, which, Dr. Beck informs us, it has been found impossible, by any artifice, to destroy.² We should, also, consider whether the condition of this discharge corresponds with the state of the breasts and other coexisting circumstances.

¹ Mare, Diet. de Méd., tom. i. p. 227. Fodéré, tom. ii. p. 13.

² Elem. Med. Jurisp., 5th ed., p. 154.

Should such an assemblage of symptoms as are here enumerated, be recognized in the case submitted for examination, no doubt could be entertained of the fact of delivery; there being, to use the words of Chaussier, "no disease, or affection, besides parturition, which can possibly produce the whole series of signs above described." Should we happen to discover a placenta in the vagina, or uterus, it would of course be decisive evidence. (See p. 60.)

But, we may not enjoy the advantage of having before us such a satisfactory combination of proofs; and may be under the necessity of forming our opinion when only some of these signs can be detected, and others are entirely absent; and when we come to examine them separately, we shall find that they must be received in evidence with very great caution, and with various modifications of their value, by which the proofs which they afford will be found little more than merely presumptive.

Thus, it is obvious that the expression of the countenance, as well as the state of the pulse and skin, above noticed, may be induced by any indisposition or exertion which may have depressed the bodily strength of the woman, and otherwise disordered the functions of her system.

The state of the breasts has been already very fully considered, so that it appears only necessary to observe here, that as, on the one hand, such a circumstance as the expulsion of hydatids, which are only an altered form of the product of conception, is capable of inducing great functional activity in the mammæ and an abundant secretion of milk, so, on the other hand, it occasionally happens in weak, delicate women, that little, or no alteration is perceived in the breasts after delivery (see page 95); and it was elsewhere remarked, that in such persons, a similar want of sympathy is sometimes observable during pregnancy, so that the changes in the areolæ are but imperfectly established. Still, we are fully warranted in considering a full breast, with abundance of milk, about the third or fourth day after delivery is supposed to have taken place, as a very strong indication of such an occurrence.

The fulness of the abdomen and relaxed state of the integuments, as well as the appearance of streaks, or cracks, and separation of the muscles, may all arise from any cause capable of

producing the same degree of distension as occurs in consequence of pregnancy; such, for instance, as dropsy, or enlarged ovary, or other abdominal tumor; or they may be the result of a former pregnancy; and we have already seen, that they may be produced so early as the sixth or seventh month of gestation.

With regard to the dark abdominal line, it is to be recollected that although present in the great majority of cases, it is often absent, and still oftener is the umbilical areola deficient; if the woman has borne a child some time dead, these marks either disappear or become very faint and indistinct: while, on the other hand, the abdominal line is occasionally visible after early abortion, as well as in cases altogether unconnected with pregnancy, and also in males. I have seen it well marked in a child laboring under mesenteric disease, in women affected with dropsy, or with uterine, or ovarian tumors; and in men, with liver disease and other abdominal affections. (See p. 143, *et seq.*, and p. 471.)

The other alterations observable in the abdominal integuments, except their relaxed condition, are only of occasional, and not constant occurrence; so that they may not be found when delivery has really and even recently occurred.

As to the uterine tumor, we must expect to find it distinct, or otherwise, in proportion to the recency of the delivery, and the period of pregnancy at which it took place, the fatness, or tenuity of the abdominal parietes, and the degree of activity with which absorption and the contractile action of the uterine fibres may have proceeded; from which results, in a great measure, the difference in the degree of development which this tumor presents, in different persons, at the same interval of time after mature parturition; being smaller, and, in consequence, less easily felt, in some, at the end of four or five days, than in others after double the time. Besides this, a tumor may be felt so situated, and yet, may not be the uterus. To satisfy ourselves on this point, we must conjoin the examination per vaginam, with that already made externally; and, in case of doubt, we should have recourse to the introduction of a bougie or sound into the cavity of the organ, which will decide the question: and even when we have ascertained that the tumor is the uncontracted uterus, we must recollect, that such a condition may equally arise from the

organ having recently expelled a mole, a large mass of hydatids, or even a considerable accumulation of retained menstrual discharge; which accidental circumstances might also produce, to a certain degree, the dilated and relaxed state of the os uteri, in which the vagina and external parts would participate. But, from such causes as these, there would be found neither swelling, contusion nor laceration of the external organs; nor could the os uteri be rendered patulous merely by increased secretion, such as long continued leucorrhœal discharge, which sometimes induces extraordinary relaxation of the other parts.

The cases of accumulated menstrual discharge sometimes present a combination of symptoms and conditions which, under certain circumstances, might readily impose on an incautious examiner: for several months, a young woman complains of sick stomach, her breasts grow full, vascular and sensitive, her abdomen enlarges, there is felt a tumor in the region of the uterus, and in it, perhaps, motions resembling those of a fœtus are supposed to be felt: at length, the accumulated fluid is discharged, and if suspicion be excited, and an examination instituted immediately afterwards, there may be found an enlarged uncontracted uterus, with its mouth patulous, admitting not merely the point of the finger, but a sound, to the depth of five or six inches, and with a discharge so resembling the lochial as to be easily mistaken for it.¹

Having thus mentioned the introduction of the sound into the cavity of the uterus, to ascertain the degree to which it is elongated, I wish to observe, that we are indebted to Dr. Simpson for a suggestion,² among many others, of an application of the uterine sound which may be made, and indeed has been made by him, a decisive means of detecting the enlargement and gradual reduction of the uterus after delivery; when these changes could not be satisfactorily made out by other means, and when it was absolutely necessary to ascertain them, for the purposes of criminal law: thus, a woman accused of infanticide, or concealment of the birth, resolutely denies delivery, and no

¹ See pp. 87, 126, and a case related by me in *Dub. Journ. Med. Sci.*, Aug., 1853, p. 209.

² *Obstetric Memoirs, &c.*, vol. i. p. 66.

uterine tumor can be felt in the usual way, owing perhaps to obesity of the woman, or some other cause; the sound is introduced, and passes to the depth of five or six inches, thereby, at once, proving the dilated state of the uterine cavity, as after delivery: again, after a few days, the sound will only pass to the depth of four inches; and so, from time to time, until at length the depth is found to be only two and a half or three inches; the evidence thus afforded is irresistible, as a proof that the uterine cavity has been recently distended by some form of content or other, which it had expelled, and was now gradually returning to its natural dimension: which circumstance, taken in conjunction with all other discoverable indications and concomitants connected with the case, must leave little doubt of the occurrence of recent delivery: but, at the same time, it must not be forgotten that this test of measurement would give similar results, in cases where only hydatids, or accumulated catamenial fluid had been recently discharged from the uterus.

In cases of feigned delivery, this measurement of the cavity of the uterus might at once detect the imposture, by showing the organ to be in its normal condition.

Laceration of the fourchette, and anterior part of the perineum, although a very common occurrence in childbirth, does not always take place. I have already (p. 469), spoken of a lady who bore five children without sustaining any injury to that part; and I once examined a young girl of sixteen, and of very diminutive stature, who had borne a full-grown child some months before, and the fourchette escaped uninjured. "With the birth of the first child," says Dr. Blundell, "the commissure is generally torn through, and the fossa disappears with it, though not always; so that the existence of these parts is no disproof of previous childbirth. And I remember myself a case in which, though I had delivered the patient, not without difficulty, with the forceps, the commissure and the fossa existed afterwards, in all their perfection."¹

Very many other instances of integrity of the anterior edge of the perineum after repeated delivery have come under my observation;² but should a laceration of the perineum be discovered,

¹ *Lancet*, N. S., vol. iv. p. 461.

² See also Marc, *loc. cit.*, and Fodéré, tom. ii.

it is a proof of immense importance. We must, however, recollect that it may present itself under conditions indicating a more or less remote date, as that of the delivery which caused it; thus, it may be found a fresh, unhealed wound, or the margins of the laceration may be perfectly healed, or even callous, but quite disunited and separate from each other; or, lastly, complete union may have taken place, so that the presence of a rigid cicatrix is the only evidence remaining of the occurrence of the accident. Dupuytren mentions, that he was once called by M. Gardien to see a young woman, who was delivered in secret. The perineum had been extensively ruptured; but, by the continued use of the suture, he succeeded in causing it to unite completely. Three or four years afterwards, he was visited by a man and woman, the husband seeking advice because he could not effect penetration, owing to the contraction of the external genitals in his wife, Dupuytren's old patient. The orifice of the vagina was excessively narrow, and there was a strong cicatrix all along the perineum. The husband was advised to persevere, which he did, and succeeded. The woman became pregnant, and was delivered, strange to say, without a renewal of the rupture.¹ Not even a rigid cicatrix may remain; I have now seen numerous instances in which laceration of the perineum, to a considerable extent, had occurred in the first labor, and on the next occasion, so little evidence of the former accident was visible, that it would have been difficult to discover that it had occurred at all.

Should we happen, in an examination of this kind, to discover a fresh laceration of the perineum, in connection with others of the signs we have been considering, especially the relaxed and dilated state of the os uteri, vagina, and external organs, and the presence of the abdominal tumor, it ought to be considered as decisive of the fact of recent delivery; but neither of the other states of the parts would be equally conclusive as proof of a former delivery, because they might have been produced by causes totally unconnected with childbirth; as happened in the case of a girl who was romping with a young man, and, losing

¹ *Leçons Orales*, tom. iii. pp. 106, 107. M. le Docteur Buet met with a nearly similar case, in which the husband was much delighted with the circumstance, as proving beyond all doubt the maiden purity of his lady.—*Journ. Comp. des Sci. Méd.*, tom. xxxix.

her balance, fell backwards on the point of the leg of a stool, which tore through the perineum, and entered the vagina, causing a frightful laceration. Or, it may have been caused by some surgical operation on the part, as in the case related by M. Berard, where it was found necessary to divide the perineum, in order to accomplish the removal of a pessary, which had lain several years in the vagina.¹ Some years ago, a patient applied to the writer for relief, as she was laboring under prolapse of the uterus, and incontinence of urine; on examination, there was also found extensive laceration of the perineum, but none of these accidents were the result of delivery. The unfortunate woman had led an abandoned life, and was the victim of a horrid outrage, committed by three or four drunken ruffians, who, having first violated her, forced a broken stone into the vagina, which tore the perineum and the neck of the bladder. The stone had been removed in the hospital, but the lacerated parts never recovered the injury.

As to the lochia, we cannot expect to obtain much information of a satisfactory kind from that source, especially if the examination is not made very soon after delivery. I have known the discharge cease after the second or third day; and even when this is not the case, we must take care that we do not confound with it some discharge of a different nature, such as the menstrual, or perhaps one of a morbid origin; from either of which, however, its peculiar smell, and a careful examination of the uterus and external organs, would, almost certainly, enable us to distinguish it. Should there be found mingled with it shreds of transparent membrane, or of placental structure, all doubt would, of course, be removed. When women have feigned delivery, they have occasionally stained their body-linen and bedclothes with the blood of some animal, as of the cow, sheep, &c.; if this be suspected, it might be satisfactory to institute the mode of investigation proposed by M. Barruel, who discovered that the blood, treated in a certain way with sulphuric acid, evolves an odor peculiar to the animal from which it was obtained;² how far reliance can be safely placed on a test apparently so equivocal,

¹ *Journal Hebdomadaire*, tom. i. p. 263.

² For references to several authorities on this subject, see Beck's *Medical Jurisprudence*, 7th ed., p. 608; and for a full account of the mode of conducting such an examination, see *Devergie, Méd. Lég.*, tom. ii. p. 908, *et seq.*

the writer is not prepared to say; but it has received the sanction of several very competent judges.

Perhaps I could not more appropriately conclude this review of the ordinary signs of delivery than by quoting the words of two very distinguished writers on such subjects. "The relative value," says Dr. Paris,¹ "which each of the signs possesses will be better appreciated after we have considered the diseases, whose effects may resemble them; but, as a general principle, we are anxious to enforce the necessity of always considering the consecutive signs of parturition collectively, and not individually; under such circumstances, the practitioner can never be betrayed into an erroneous conclusion." "Other circumstances," observes Mr. Burns,² "may also concur in confirming the opinion of the practitioner; as, for instance, if the patient give an absurd account of the way in which her bulk suddenly left her, ascribing it to a perspiration, which never, in a single night, can carry off the great size of the abdomen in the end of a supposed pregnancy."

Delivery without Consciousness.—Having in a former chapter (see p. 294 *et seq.*) discussed the possibility of impregnation being effected without the woman's knowledge, as during sleep, and having alluded (p. 297) to the fact of delivery sometimes taking place under similar circumstances, as an argument, *à fortiori*, in favor of the credibility of such an occurrence, it seems necessary now, to consider briefly that question. That a woman may be delivered without being sensible of it, if she be at the time laboring under cerebral oppression, or derangement, as in coma, in delirium, in puerperal convulsions, stupefied by narcotics,³ or by ardent spirits,⁴ is a fact of repeated observation; but, it is not pretended that, in such instances, the woman could be *afterwards* permanently ignorant that she had been delivered; except, in cases of mental disturbance lasting through a considerable period of time, as in the following very remarkable case, from a source which leaves no doubt of the accuracy of the relation. "A fright produced by the dangerous situation of her only son,

¹ Medical Jurisprudence, vol. i. p. 253.

² Principles of Midwifery, 7th ed., p. 547.

³ As in the celebrated case of the Countess of St. Geran. Causes Célèbres, cause 259.

⁴ See case by M. Deneux in the Dict. des Sciences Méd., tom. xxxi. p. 212.

when eighteen months old, brought on, in Mrs. Durant, an alarming illness attended with some singular phenomena, the most singular of which respected her memory. The illness happened in July; she was then advanced six months in a state of pregnancy, and was, when perfectly insensible, delivered of a child. On awaking from the insensibility, which had continued for three days, she imagined it was the month of *January*. Her mental powers, generally, were but slightly impaired, and soon regained their former perfection; nor was her memory affected, except as regarded the preceding six months: of that time she had forgotten *all* the events. Some accidental circumstance might afterwards, occasionally, produce a train of thought, which would bring an event of that six months to her recollection. Several of the most important, however, were never regained, *nor could she, I believe, to the hour of her death, remember that she had then been pregnant.*"¹

That a woman may be delivered during deep, natural sleep, *even in a first labor*, without being conscious of it at the time, however improbable it may at first sight appear, and however rare its occurrence, is nevertheless a fact beyond all doubt; as will appear from the following case, which occurred under my own observation. In March, 1848, I attended a lady, between nineteen and twenty years of age, in her first confinement; her pains, which lasted altogether about six hours, were, all through, sharp and trying: as the labor drew towards its close, she suffered less distress, and slept soundly, at intervals, between the expulsive efforts, as is very usual at such a time: but, about five minutes before the birth of her child, she fell into a deep sleep, and did not waken until after I had divided the funis, and the child was in the nurse's lap, at the other end of the room. I was standing by her all the time, and therefore can state with certainty, that she took no anodyne, or anæsthetic of any kind.

The first time I was made acquainted with a fact of this kind, was by the late Dr. Douglas, one of the most experienced practitioners in this city; and whose correct and ingenious exposition of the evolution (improperly called spontaneous) of the foetus, is so well known to, and so justly appreciated by, the profession in

¹ Durant's Memoirs of an Only Son, vol. i. p. 147.

every part of the world. In a letter to me, dated 5th November, 1832, Dr. Douglas states that he was called, about six o'clock A. M., on the 26th of September, 1828, to attend Mrs. D., of the county of W——, but then residing in Eccles Street. On his arrival, he found the house in the utmost confusion, and was told that the child had been born before the messenger was dispatched for the doctor; and from the lady herself he learned that, about half an hour previously, she had been awakened from a natural sleep by the alarm of a daughter about five years old, who had slept with her for some nights before; and this alarm had been occasioned by the little girl feeling the movements, and hearing the crying of an infant in the bed: to the mother's great surprise, she found she had brought forth her child without any consciousness of the fact. Mrs. D. had had several children, with favorable labors. In the *London Practice of Midwifery*,¹ a work generally ascribed to a late very distinguished practitioner, we find the following account: "A lady of great respectability, the wife of a peer of the realm, was actually delivered once in her sleep: she immediately awaked her husband, being a little alarmed at finding one more in bed than was before." Such a contingency as happened to these two ladies, *whose whole labor passed without their knowledge*, could only happen to women who had previously borne children: and except under very peculiar circumstances, we could hardly credit such an occurrence in a first delivery. "We may suppose," says Denman, "the parts, through which the child must pass so perfectly disposed to dilate, that they would make little or no resistance to the excluding force, and then, a woman would be delivered with little or no pain. This observation will not only discover the reason of the great advantage obtained by a labor being slow and lingering; and why some women are delivered comparatively without pain; but, with this perfect disposition to dilate, if the patient should be asleep when the action of the uterus came on, of the possibility of her being delivered before she was quite awake."

I have elsewhere² mentioned the case of a patient of mine who bore eight children, without ever having labor pain; and her de-

¹ Fifth ed., p. 87. See also Barlow's *Essays on Surgery and Midwifery*, p. 182.

² Introduction to *Midwifery*, 5th ed., p. 275.

³ See *Dub. Med. Journ.*, May, 1849, p. 332.

liveries were so sudden and void of sensible effort, that in more than one instance they took place under most awkward circumstances, but without any suffering. Now, had the parturient disposition come on during this lady's sleep, it seems quite credible that her child might be born without her being conscious of it at the moment.

Dr. Wharrie relates¹ the case of a primipare aged twenty-one, who had been in labor about six hours; she complained of no pain, and the child was born without effort or consciousness: it was healthy but small, weighing rather more than four pounds.

However, notwithstanding such rare exceptional cases, I must say with Dr. A. Taylor, "that it is in the highest degree improbable that any *primiparous* female should be delivered during *ordinary sleep*, without being roused and brought to a sense of her condition."²

The occurrence of delivery after the life of the mother has become extinct, and consequently effected by the independent contractile power of the uterus, has been attested by so many authors of established credit, that we cannot refuse it our belief; having received the testimony of Fodéré,³ Buffon,⁴ Leroux,⁵ Levret,⁶ Baudelocque,⁷ Bichat,⁸ and others⁹ of equally high authority, who have recorded instances of the fact, to which, for the present, we shall merely refer as below.

Examination after Death.—Having already, Chapter XIII. p. 338, described the signs of pregnancy which may be discovered after death, it will not be necessary now to say much in addition to the observations already made. In such an examination, our attention should be directed to the same objects which we have

¹ Cormack's Journal, Jan., 1846, p. 12.

² Medical Jurisprudence, 5th ed., p. 511.

³ Méd. Leg., tom. ii. p. 11.

⁴ See Gardien, vol. ii. p. 212.

⁵ Obs. des Pertes de Sang, obs. xiii. p. 25.

⁶ Art des Accouchemens.

⁷ Art des Accouchemens, tom. i. p. 123, note, ed. 1822.

⁸ Anatomie Descriptive, tom. iv. p. 392, ed. 1829.

⁹ See Hartemann, Act. Nat. Curios., Dec. 11, an. 3. Dict. des Sci. Méd., vol. xxxi. p. 212. Journ. Univ. des Sci. Méd., Août, 1817. Lond. Med. and Phys. Journ., vol. xlvii. p. 26. Dr. Planque, Bibliothèque de Méd. Choisie, vol. iii. p. 222. Gardien, tom. ii. p. 220.

just been considering as the proofs of delivery which may be recognized during life; almost all of which may be also ascertained after death, provided, as before insisted on, the investigation be undertaken within a proper time: in addition to these means, by opening the body we are enabled to satisfy ourselves more precisely of the exact condition of the uterus and its appendages. Should death take place during or immediately after the act of parturition, especially from hemorrhage, the uterus may be found lying in the abdomen a flattened, flabby bag, from eight to ten inches long, its mouth gaping wide open so that the hand would pass through it without resistance; its parietes are soft and relaxed, its cavity often containing large coagula of blood, and its internal surface covered with the soft and pulpy remains of the decidua intermixed with flakes of lymph, which, if the part be immersed in fluid, appear as flocculent processes, adhering to and springing from it in great numbers, while the portion to which the placenta had been adhering, usually about a third of the inner surface of the contracted organ, is distinguished by having less of these deciduous flakes; the substance of the organ in that situation appearing as if laid bare, and exhibiting several semilunar and apparently valvular openings in its structure.

But these conditions will be greatly altered should the woman have survived delivery a few days, so as to afford time for the uterus to contract, and its tissue to undergo its peculiar fatty transformation and absorption; and the change produced will be in proportion to the time since delivery, and the energy with which the organ may have exerted its contractile powers; so that in some instances it may be found as large, at the end of a week, as in others where the examination is made within two or three days. It would therefore be very difficult, if not impossible, to assign the exact dimensions which the uterus will present at given periods after mature delivery; and should it have occurred prematurely, these dimensions will, of course, be thereby further affected. When delivery has taken place at the full time, and the uterus has contracted perfectly, if an examination be made within a day or two it will be found about 7 or 8 inches long and 4 broad; its external surface having a vascular appearance, and not unfrequently presenting patches of a purplish color; its substance divided by the knife, is found from an inch to an inch

and a half thick, of the consistence, and nearly of the color of firm muscular fibre, of which it appears to consist; and the cut surface displays the orifices of a great number of very large vessels; it now weighs about one pound and a half. In the writer's museum, is the uterus of a woman who died on the second day after delivery at the full time, and it measures 8 inches in length by $4\frac{1}{2}$ in breadth, and 3 in the antero-posterior diameter. Its parietes are from 1 inch 5 lines to 1 inch in thickness; its internal surface differs little from the description already given; the Fallopian tubes and ovaries, or at least one of the latter, are turgid and vascular, and more confined to the sides of the uterus. If the labor has been accompanied by profuse hemorrhage, or if from any cause the organ has not contracted well, its dimensions will be proportionally greater.

At the end of a week the organ has diminished to a length of between 5 and 6 inches, and weighs about one pound and a quarter; after a fortnight, it does not exceed five inches in length, and its weight is reduced to about three-fourths of a pound, or a little less; its vascularity is diminished, and the thickness of its parietes reduced about one-third; but the density of their structure is found increased in a like proportion, so that the orifices of the vessels are much less distinct, and the color of the muscular substance has become much paler. But, it must ever be taken into account that the dimensions of the uterine tumor, after delivery, will depend, first, on the activity of the contraction and absorption which take place; which we find to be more or less energetic in different instances, without any obvious reason; in states of exhaustion, these processes would, of course, operate more slowly than under a vigorous state of the general health; secondly, on the interval of time elapsed; and thirdly, on the period of gestation at which its contents were expelled; so that, for example, if delivery occurred in the sixth month, the uterus would be found as small two or three days after delivery, as it would at the end of two or three weeks after parturition at the full time. The writer had, some time since, an opportunity of examining two cases in point. In the first, the woman died *sixteen days* after mature delivery; the uterus was 5 inches 2 lines in length, 3 inches 8 lines in breadth, and its substance averaged, in the body and fundus, from 7 to 8 lines in thickness. In the

second case, death occurred *thirteen days* after premature delivery in the seventh month; and here the uterus measured only 3 inches 9 lines in length, by 2 inches 9 lines in breadth, and its substance was from 6 to 7 lines in thickness. 3. The uterus of a woman who died on the fifth day after abortion at three and a half months, was $5\frac{1}{8}$ inches long, $3\frac{3}{8}$ broad, by $2\frac{1}{4}$ from front to back, and its substance was from 6 to 8 lines thick. 4. The uterus of a woman who died a few hours after abortion, at five months complete, measured $5\frac{5}{8}$ inches in length, $3\frac{3}{4}$ in breadth, $1\frac{1}{2}$ from front to back, and its substance was from 7 to 9 lines in thickness. 5. A uterus, where death took place on the fourth day after delivery of twins, at the end of the sixth month, measured 7 inches in length, $4\frac{1}{2}$ in breadth, 2 from front to back, and its substance was $\frac{3}{4}$ of an inch in the thickest part; in this case, there was only one corpus luteum (see p. 374). 6. The uterus of a young woman who died fourteen days after abortion, at five months, was, within the last few days, sent to me by Professor Geoghegan; its length was $4\frac{1}{2}$ inches, breadth $2\frac{3}{4}$, from front to back $1\frac{1}{8}$; its posterior wall was nearly double as thick as the anterior. 7. Professor Banks sent me the uterus of a young woman who died on the fourth day after delivery of twins, at five months; it measured $4\frac{1}{2}$ inches in length, by 3 in breadth, and 2 in thickness.

Other circumstances being the same, the uterus is, in general, larger after a plural birth, than after that of a single child.

Dr. R. Heschl, in his *Researches on the Conduct of the Human Uterus after Delivery*,¹ gives the following as its weights at different periods:—

" Immediately after delivery . . .	1 lb. 6— 8 oz.
In twin cases	2 " 5— 7 "
At the end of first week	1 " 3— 5 "
At the end of second "	10—11 "
At the end of fifth "	5— 6 "

"And in the second month, it comes down to its normal weight of $1\frac{1}{2}$ to $2\frac{1}{2}$ ounces; whence, it appears, that the most rapid diminution takes place in the second week after delivery, which is fully explained by the facts about to be mentioned." He then

¹ Translation by Dr. Robert M'Donnell, p. 1.

proceeds to give a full account of the change which takes place in the proper substance of the uterus: "the transformation of which into molecular fat is so complete, that not one single fibre of the uterus, existing previous to childbirth, remains behind. This transformation does not commence before the fourth or sixth day, and not after the eighth, pretty evenly at all points, the cervix, for the most part, continuing for a couple of days longer in the condition in which it was just after delivery; somewhat later, the inner layer is found more advanced in its reconstruction than the outer. In the single muscular fibres, this process of decay begins at many points at once; at first, the slight serpentine appearance (fig. 23) disappears, the outline becomes pale, and there appear (often arranged in rows) yellow granules, which, where the ends of the fibre-cells are thin, lead to their early dissolution. The cell itself (fig. 24) is pale, but well

Fig. 23.



Muscular fibres of a uterus eight days after delivery.

Fig. 24.



The same fourteen days to four weeks after delivery.

defined, until the increasing quantity of fat granules obscure it. An absorption of the surrounding tissue must now very soon take place, which occurs simultaneously with the considerable and rapid diminution in weight above alluded to. With the advance of the fatty transformation, the uterus becomes, in a

corresponding degree, friable, and continues so till it has completely returned to its usual condition; it loses its reddish color, becomes of a dirty yellow, and from these two circumstances (viz., its friability and color), it is possible, by a mere inspection with the naked eye, to perceive the termination of these changes, or even to know the size and weight of the organ at different periods of the process. In the fourth week, there usually appears, when the uterus has almost resumed its normal volume, but is still yellow and friable, the first commencement of a new formation of uterine substance in the body of the organ, whilst (fig. 25) in the outer layer, nuclei cells, and finally, cells drawn out into fibres (which assume completely the form of the subsequent muscular fibres), make their appearance, and become evident as young uterine substance. This formation is rarely to be

Fig. 25.



The development of the new uterus fibres about the fourth week.

met with at an earlier period, and then only scattered here and there. Whilst the last portions of the muscular structure decay, and are absorbed, the new substance is developed at many points, so that in the majority of cases the reconstruction of the uterus is complete at the end of the second month. Puerperal diseases do not, in general, check, in any appreciable degree, this chain of

changes, even though the uterus be itself diseased, &c. &c."—pp. 8, 9, 10.¹

The occurrence of posthumous parturition has been already noticed (p. 492), as showing that the uterus retains its contractile power after death: it may be well to notice here another illustration of this fact, which may be brought before us, in the case of a woman dying during, or immediately after parturition; and the examination of the uterus not being made for a day or two afterwards; under which circumstances, we need not be surprised to find the organ considerably contracted, perhaps almost as much so as if the woman had survived her delivery. I have seen several examples of this, and it has occurred to others also. In a case recorded by Dr. C. M. Clarke,² in which the woman died undelivered, from a singular form of peritoneal rupture, delivery was accomplished by turning, after her death, and on examining the body next day, the uterus was found "in some measure contracted, its cavity not being capable of holding more than a quart." Leroux relates,³ that being called to a woman in labor, and being delayed, he found her dead when he arrived; he, however, turned the child, and delivered her, but on attempting to deliver the placenta, he was surprised to find that the cervix had contracted so much as to oppose the passage of his hand, to such a degree as to make him doubt that she was really dead. Baudelocque mentions,⁴ that on opening the body of a woman whom he had delivered under similar circumstances, he found the uterus firmly contracted on the placenta.

After the third week, very little information is likely to be obtained from an examination of the uterus merely; for although it probably is not reduced to its original unimpregnated condition before the end of the fourth, fifth, or sixth week, the altera-

¹ It is only justice to Professor M. Retzius to mention here, that, in 1851, he published some very interesting observations on the process by which nature effects the reduction of the puerperal uterus, the process of absorption being preceded by fatty transformation of its component fibres; and he showed, also, that the blood, during puerperal convalescence, exhibits, under the microscope, a corresponding superabundance of globules, or granules of fat.

² Trans. for the Improvement of Med. and Chir. Knowledge, vol. iii. p. 290.

³ *Traité des Pertes*, obs. xiii. p. 25.

⁴ *Tom. i. p. 123*, note.

tions which can be appreciated towards the conclusion of that period, are too liable to have been induced by contingent causes, to allow of our attaching value to them as proofs of delivery. Under such circumstances, our attention would be more profitably directed to an examination of the ovaries, and the existence of the corpus luteum; the value of which has been already so fully considered in Chap. XIII., that it appears now only necessary to remark, that although its existence, with all its characters in perfection, as already described, is, in the writer's opinion, proof positive of previous conception, it can be received as evidence of recent delivery of a child only when it is found in connection with other circumstances indicative of the occurrence of that event;¹ in which case it ought to be considered as a very powerfully corroborative proof. At the same time, it must be borne in mind, that after the expulsion of a large mass of hydatids, as in case related p. 220, a perfect corpus luteum may be found accompanied by other conditions of the uterus so closely resembling those observable after childbirth, as to be with great difficulty distinguishable therefrom.

To what has been stated already (p. 377), concerning the cicatrices on the surface of the ovaries, I shall only add here, in reference to their not being permanent, the opinion of Murat, whose observations confirm my statement in a very satisfactory manner: his words are: "*Placé dans un hospice de femmes, j'ai souvent fait des recherches à ce sujet; et je me suis assuré, qu'il n'était pas possible de déterminer le nombre des grossesses par celui des cicatricules; car la plupart s'effacent avec l'âge.*"²

The substance of the preceding observations may be summed up in the following general corollaries:—

1. The signs of delivery are most distinct after the birth of a full-grown child; and least so, when the uterine contents have been expelled at an early period of pregnancy.
2. The proofs are more distinct in proportion to the recency of the delivery; and any examination made after the lapse of ten days from the time of the delivery, is not likely to afford

¹ See Report of the Trial of Charles Angus for the Murder of Miss Burns, Liverpool, 1808.

² Dict. des Sci. Méd., tom. vi. p. 204.

satisfactory information; the most decisive signs, in general, disappearing within a week.

3. The third or fourth day, generally, presents the results of delivery very distinctly; the condition of the breasts being then most remarkable, from the active secretion of milk.
4. A first delivery is more easily detected than subsequent ones.
5. We cannot safely rely on any of the signs of delivery viewed separately, but must consider them collectively, their mutual relation and correspondence with each other, and with the other collateral circumstances of the woman's case and history.
6. The chief points of attention ought to be the state of the uterus, the external parts, and of the breasts.
7. Taken by itself, a fresh laceration of the perineum ought to be considered as a proof of great value.
8. There are certain physical signs which, when present, are sufficient to establish a negative decision; such are, for instance, a perfect hymen, or an imperforate state of the parts.
9. But, on the other hand, a woman may have borne children, and no one mark remain by which the fact of delivery could be proved, after the lapse of even a few weeks.
10. A woman may be delivered while in a state of insensibility, or even during deep natural sleep; so that her child may perish merely from want of attention, and without any moral delinquency on her part.
11. A woman may be naturally pregnant, and the life of her child ascertained, and yet childbirth may not occur; the child perishing and being decomposed before the time of delivery, as in the cases related, p. 589, *et seq.*

ON THE
SPONTANEOUS AMPUTATION
OF THE
FŒTAL LIMBS IN UTERO,
AND SOME OTHER PATHOLOGICAL LESIONS, TO WHICH THE CHILD
IS LIABLE BEFORE BIRTH.

ON THE
SPONTANEOUS AMPUTATION
OF THE
FŒTAL LIMBS IN UTERO.

THERE is an impression very generally entertained in society, and especially among those whose experience, or whose studies have made them but little conversant with the knowledge of disease, that

"the thousand natural shocks
That flesh is heir to,"

are an inheritance, on which we do not enter until we have breathed the breath of this world's life; and, considering the peculiar circumstances of the child before birth, one would at first sight be inclined to conclude that, although, of course, exposed to the risk of injury from accidents or diseases occurring to the mother, it would not be liable to many, or serious lesions of its own: yet observation and experience have fully and sadly revealed to us a very different state of facts, and force upon us the melancholy truth, that the seeds of life are often sown adulterated with those of infirmity and decay; that disease may mutilate, and death destroy, long before our entrance into life: for, as far as past investigation has enabled us to reach, we have reason to believe that the unborn child is not only liable to certain affections peculiar to itself, but that it is, also, subject to almost all those which affect the adult; and under this peculiar disadvantage, that while for it there are indeed the "*mille mortis viæ*," there are not, unhappily, as yet added the "*mille salutis*."

The multiplicity of accidents and morbid affections, to which

the child before birth is liable, and from which it has been proved to suffer injury or death, will perhaps most readily appear by looking over the work of Graetzer, written specially on this subject; *Die Krankheiten des Fœtus*, which contains no less than eighty-two chapters, filled exclusively with descriptions of these intra-uterine infirmities and lesions.

It is by no means my intention, at present, to attempt even the slightest sketch of the whole state of this question, but to refer to a few facts out of many, which, independently of their physiological or pathological interest, may have influential relations, both with our social happiness and the administration of justice; my principal object being, of course, to illustrate that remarkable lesion now generally known as the spontaneous amputation of the foetal limbs, a subject in which I have long felt a peculiar interest; and I think it will be no exaggeration to assert that this process, by which the limb of a child in utero is cut off as completely as it could be by the surgeon's hand, is the most extraordinary of all the pathological phenomena exhibited in our system, whether before birth or afterwards.

CASE I.—Very early in my professional life, my attention was forcibly arrested by seeing, in a Medical Journal,¹ a case of this kind related by a Mr. Watkinson, who stated "that, 29th December, 1824, being in attendance on a lady of twenty years of age, in her first labor, which was natural and easy, he discovered, on the birth of the child, that the left foot had been amputated a little above the ankle; and the part was *nearly* but *not quite* healed, the bones protruding a little. The child was alive, but survived only a few minutes; on making further search, the amputated foot was found in utero, and it also was *nearly* healed. There did not appear to have been any hemorrhage from the limb; the separated foot was *much smaller* than the other, which was rather turned inward; it showed *no mark of putrefaction*, but appeared to be in a state of *perfect preservation*, not being even discolored." From comparing the two feet, Mr. W. concluded, that the detached one must have been two months separated: "the mother had not met with any accident, nor any particular mental emotion, and she was sufficiently independent to render unnecessary any over-

¹ Lond. Med. and Phys. Journ., July, 1825, vol. liv. p. 38.

exertion on her part." Mr. Watkinson offered no opinion on the nature or cause of the accident, but gave the annexed sketch, representing the condition of the parts.

Fig. 26.



This account filled me with the greatest astonishment, and I thought the fact almost exceeded belief; but it was so satisfactorily confirmed by others who saw the child, that I could no longer doubt; and many and many a time did I think over it, and wonder how such a thing could be brought about, but all in vain; the idea of gangrene, which was the received doctrine of the day, evidently would not apply in the case of parts expressly described as in a state of *perfect preservation*, and *not even discolored*: and so I pondered on, "weary of conjecture," until at length a case in my own practice disclosed the secret, and at the same time showed me that the effect produced was not more extraordinary than the agency by which it was accomplished.

CASE II.—In the year 1829, I attended a patient, under circumstances of considerable danger, from hemorrhage attending abortion in the fifth month; and on the expulsion of the foetus its singular conformation, fortunately, attracted my attention strongly, and induced me to examine it closely. The head was misshapen and monstrous, the brain covered only by integument, and towering upwards like a helmet over the head; but the cir-

cumstance, deserving of especial notice was the appearance of complete ligaments surrounding the limbs; and on examining them closely, I found that they consisted of distinct threads passing from both hands downwards to the legs; at one end these threads, or fine cords, had formed a complete ligature round the middle of each hand, causing a distinct depression where it passed, the part of the hand below it being almost completely undeveloped: from the hands these cords descended towards the legs, which were crossed, and surrounding them in this position, just above the ankles, compressed them so tightly, that fully two-thirds of their whole thickness were thereby divided; *without, however, causing*

Fig. 27.



any breach in the skin; nor was there the slightest appearance of disease, or even discoloration, of any of the parts; but the feet were, like the hands, imperfectly developed and misshapen (see fig. 27).

The mother was about twenty-five years of age, and was at the time laboring under fever; but had been previously in perfectly good health, and had not met with any accident of bodily injury, or mental agitation.

I published the foregoing account of this case, together with some brief observations on the agency by which the lesion was produced, in the *Dublin Journal of Medical Science* for May, 1832;¹ and in the month of September following I inserted, in the same Jour-

nal,² the particulars of the second case, which was brought under my observation through the kindness of Dr. J. Labatt.

CASE III.—A healthy woman gave birth to a stillborn child, in the eighth month of gestation; it was affected with an umbilical hernia of great size, formed by the protrusion of the liver, stomach, and small intestines through the umbilical aperture into the sheath of the funis; the umbilical vessels being, in consequence, a good deal displaced from their natural contiguity to

¹ Vol. i. p. 140.

² Vol. ii. p. 49.

each other; but, in other respects, they observed their usual course and connections: the opening through which the viscera protruded was about two inches in diameter; but, the state of the limbs is the point of interest connected with our inquiry; both were misshapen, and, as happened in Mr. Watkinson's case, *the left* exhibits this remarkable pathological lesion, and exactly in the same situation (see fig. 28).

Just above the ankle, there is a deep depression all around the limb, and sinking to such a depth as to leave only the bones and skin unaffected by it; the diameter of the undivided part being less than half an inch, while that of the leg just above the depression is an inch and a quarter: the appearance of the groove is exactly such as would be made by tying a string very tight round the plump limb of a child; and, in my opinion, could not have been produced in any other way; the woman had been attended in her labor by a pupil, and the part had been very much handled, and examined by several, before I saw it, so that I was not surprised at not finding any ligature on the limb, but the mark of it was so distinct, in the bottom of the depression, as to leave no doubt of its previous existence there, producing constriction of the part. It is important, also, to observe, as confirmatory of my view of this matter, that *the integuments are not at all broken, or divided*, but are merely carried inwards with the constricting agent; so that, had the separation of the limb been completed, each stump *would appear skinned over*, except at the ends of the bones, and so present the appearance of being *partially healed*, as described by Watkinson, or would be, perhaps, completely cicatrized, as in the cases related by Chaussier, and several others, to which reference will be made hereafter; the foot was a little swollen and somewhat discolored, just as would happen if a ligature were tightened round the lower part of the leg of a child after birth; it seemed turgid with blood, but was

Fig. 28.



without any appearance whatever of gangrene; the toes were very imperfectly developed.

In both these instances thus described by me, from the condition of the limbs, and the impossibility of the parts under the ligatures continuing their growth under such circumstances, it appears scarcely to be doubted that, had the children continued to live and grow, the parts of the limbs below the constriction would have separated, and so undergone spontaneous amputation.

Since the publication of these two papers of mine, the subject has attracted a good deal of attention, not only in these countries, but also on the Continent, and in America; from all of which places cases, commentaries, or notices have appeared; and as the explanation given by me of the mode in which this singular pathological change is effected, has been, I believe, almost universally adopted as the true one, I thought it would be advisable to insert here a brief account of my former cases, together with some which have since occurred to myself or others, with such additional observations as further opportunity for examining the subject may have suggested.

This remarkable lesion had been previously mentioned by several authors of credit, as Richerand,¹ Desormeaux,² Billard,³ and Murat;⁴ though none of them appear to have witnessed any case of the kind themselves; but, they all agree in regarding this pathological change as simply the result of inflammation and gangrene. Haller evidently was not aware of any such case, for although he gives a long list of extraordinary mutilations of the foetus, he considers them as the result of imperfect development or malformation, and not of separation, or *removal of parts already formed*; for he expressly objects to the authors who have furnished such descriptions, that they cannot even quote one instance in which, "*manus truncata, aliusve artus, in membranis foetus, seorsim a corpore, repertus sit.*"⁵ This objection of Haller's, I shall notice more particularly hereafter; and for the present, only

¹ *Elémens de Physiologie*, p. 477.

² *Dict. de Méd.*, tom. xv. p. 404.

³ *Maladies des Enfans*, p. 623.

⁴ *Dict. des Sci. Méd.*, tom. xvi. p. 70.

⁵ *Elem. Physiologiæ*, tom. viii. p. 135, 1778.

observe that, as far as I am aware, this confirmatory desideratum which he demands was not supplied until 1812.

(CASES IV., V., VI.), when Chaussier announced¹ that he had examined two children in whom a portion of the forearm was wanting at birth, and in whom the limb looked as if it had been separated by a vital action after an attack of gangrene. The portion of the forearm which remained, exhibited at its termination a firm white cicatrix, in the midst of which stood two projecting bony elongations covered with epidermis. On dissection, the muscles, arteries, and bones of the arm resembled, in appearance and condition, those of the arm of an adult which had been amputated, or curtailed by accidental gangrene; and in a third case, of a foetus of eight months, he found the separated portion of the arm and hand lying apart, and *the stump of the limb healed*.

Chaussier, like most of his predecessors, attributes the accident to gangrene, as the cause which would most obviously account for its production: though it does not appear, from his account, that there were present any of the pathological evidences of that condition; and, in the case first related, the child was born alive, and it is expressly mentioned, that neither the stump of the limb, nor the part amputated, showed any symptom of disorganization or disease, not being even discolored.

CASE VII.—After the case brought under my observation by Dr. Labatt, the next to which my attention was drawn, was one communicated to me by Dr. Tyson West, of Alford, Lincolnshire, in consequence of his becoming acquainted with my account of this matter. Dr. West attended a patient at the Westminster Lying-in Hospital, in 1805, who, after a natural and easy labor, gave birth to a stillborn child, which had but one leg, the other limb exhibiting "positive proof of having been spontaneously amputated some time before, the stump being *partially healed and nicely rounded*, about an inch and a half below the knee; the unhealed portion of the stump was about this size:" he accounts for the amputated portion of the limb not being found, in consequence of the occurrence of a most dangerous accident, which threw all the parties concerned into great alarm and confusion. But he adds



¹ Discours prononcé à l'Hospice de la Maternité, 1812.

that it struck him at the time, and he is still of the same opinion, "that the division of the limb was effected by *some stricture round it.*"¹

CASE VIII.—Schaeffer, in his thesis,² gives a remarkable instance of deformities in a fœtus, some of which appear evidently to be spontaneous amputations, effected by ligatures. A woman, at thirty-two, brought forth, at the eighth month, a female child, which lived four hours; the head and trunk were well formed, but the extremities presented numerous peculiarities; among which may be mentioned, as bearing most directly on our subject, the great toe of the right foot (fig. 29) was short, and somewhat deformed; one of its phalanges appearing to be wanting, and a small, but deep cicatrix, occupying the situation in which its nail ought to have been. The second toe was also destitute of a nail, and had a *kind of membranous cord attached to its extremity*. All the part of the left leg (fig. 30) below the gastroc-

Fig. 29.

Fig. 30.



nemii seemed, as it were, amputated, and to have the whole surface of the stump covered over with recent cuticle, a small central part only excepted, which was red, and presented the appearance of a recent wound. In this uncicatrized central part, the ends

¹ A notice of this case was inserted by Dr. West in the *Lond. Med. and Surg. Journ.*, for 1832, vol. i. p. 741.

² "Fœtus cum Matre, per Nervos Commercio," Erlangen, 1775.

of the bones were visible, and in the space between them, a dense fibrous cord of some length took its origin, having attached to its further or loose extremity a small body, which, on minute examination, proved to be a foot, of the size belonging to a foetus of the third month, with divisions on its inferior edge representing the five toes. On the superior part of the foot, a minute cartilaginous-like corpuscle was placed.

CASE IX.—A case, having some striking points of coincidence with this of Schaeffer's, is related by Zagorsky,¹ who has described a malformed foetus of the fifth month, which, as in the first of my two cases, had the head greatly deformed, and presenting tumors containing cerebral substance; the hands, also, especially the left, were much mutilated: it was, moreover, in addition to several other deformities, deficient of the right leg, the thigh

Fig. 31.



ending in a rounded and cicatrized stump, in the centre of which was a small projecting point; from this was prolonged a slender thread-like membrane, strong in proportion to its size, that ran

¹ Memoirs of the Imperial Academy of Sciences of St. Petersburg for 1834, sixth series, vol. iii. pp. 3, 7.

directly across to *the left leg*, which it encircled, a little above the ankle, like a tightened ligature, and formed in it a depression of considerable depth; while the portion of the extremity below the ligature was, as well as the appended foot, rather tumefied. From about the middle of the transverse thread-like membrane, a small body of an oblong form was suspended, which, on examination, proved to be the right foot perfectly formed, as its general outline and five toes demonstrated; but not larger than the foot of a foetus of the tenth or twelfth week.

These two cases by Schaeffer and Zagorsky are, in my estimation, of peculiar interest, as affording forcible illustrations in support of my view, that the agency by which the lesion of the limb is produced, and its amputation sometimes effected, is constriction, by a cord or ligature thrown around it; and I think we shall find a similar conclusion legitimately deducible from Beclard's case, and several others to be related hereafter: it is also a curious coincidence in these two cases, that the cords or ligatures and the atrophied feet should be so much alike, and arranged in a manner so strikingly similar; for it seems hardly to be doubted that the organized cord, which was found springing from the second toe of the right foot in Schaeffer's case, had originally its other end attached to, or thrown round some part of the left limb.

CASE X.—Dr. Smith has related¹ a case, in which the attempt to turn a child was nearly defeated by the absence of the feet; and on examination, after the extraction of the child, which was dead, it was found that the legs were entirely wanting from below the knees; and "there was as regular a cicatrization across the stump, as if the limbs had been amputated, and the stumps subsequently neatly healed: nothing is said as to whether the legs were discovered or not."

CASE XI.—Beclard's case, just alluded to, was that of a very deformed hydrocephalic foetus, whose *left leg* was divided by a transverse depression that penetrated as deep as the bones, and resembled that which would have been produced by a tight ligature. The two opposite surfaces of this indentation *were both cicatrized*, and almost touching one another. "It is evident," says

¹ Lancet, December 16th, 1837, p. 409.

Beclard, "that if this foetus had remained in utero for some time longer, it would have been born with an amputated and cicatrized leg; the remains of which might have been found in the liquor amnii."¹

CASE XII.—The following decisive and remarkable case, published in the *American Journal of Medical Science*, by Dr. F. P. Fitch, of New Boston,² in consequence of his having read my original paper, differs from all others which I have become acquainted with, in the fact of the amputated member having been expelled from the uterus two weeks *before* the birth of the child.

"On the 17th of March a healthy woman, then in the seventh month of pregnancy, suddenly discharged the liquor amnii. On the 21st, a substance escaped from the vagina which proved to be a perfectly well-formed foetal foot, apparently separated at the ankle-joint, and in a state of complete preservation. On the 5th of April, she was delivered of a seven months child, which lived about half an hour. At the left side of the centre of the forehead, there was a horny protuberance, of the size of the middle finger; the face, also, was greatly deformed, owing to the entire absence of the upper lip, and bones beneath, to a great extent: which the mother *very confidently* attributed to an accidental view of a person whose upper lip and part of the nose had been destroyed by a cancerous sore." In this case, the state of the right limb, from which the foot had been separated, was very remarkable. "As far as the knee-joint, this limb did not differ in appearance from its fellow; but, at that point, it terminated abruptly, and over the end the skin had contracted uni-

¹ Bulletins de la Faculté, &c., for 1817, tom. v. p. 213. In the former edition of this work, a case was inserted here after Beclard's, as quoted by Albert F. Veiel, from *Froriep's Notizen*, concerning which Dr. Hecker affords us a salutary caution. "I will observe," he says, "for the sake of those who may hereafter desire to collect all existing observations of spontaneous amputations, that the fourth case quoted by Simpson as taken from a Tübingen dissertation, is none other than that described by Watkinson; which consequently has been brought again, as new merchandise, to its native land, as appears by comparing the source from which the dissertation is taken, namely *Froriep's Notizen*, Band xii. p. 26."—*Monatsschrift für Geburtskunde*, &c., Berlin, Band iii. Heft. 6, June, 1854.

² No. xxxv. for May, 1836, p. 90, and Dub. Med. Journ. for March, 1837, p. 166.

formly from every side, towards the centre, without, however, forming a complete cicatrice." "Two days after delivery, a substance escaped, which had every appearance of having been the portion intervening between the knee and ankle-joint, but, at that time, in a stage of decomposition so advanced, that it could not be well examined. Upon the foot, the place of separation was contracted to the size of a small pin's head, and *the healing process had apparently been as perfect, and progressed very nearly as far, as that on the lower extremity of the femur.*"

In 1836, Dr. Simpson, of Edinburgh, published¹ an excellent paper on this subject; into which he has, with his usual success, collected a vast quantity of curious information, and many most important cases from authors; to which he has added not a few from his own observation, together with several ingenious and highly apposite remarks; he also assents to, and, indeed, strongly confirms my view, both as to the agent which produces the change, and its consisting of organized lymph, such as is usually elaborated under the influence of inflammatory action, from which, it is well known, that several varieties of foetal deformities arise; and it is a matter of every-day observation, how completely lymph so effused will be converted into distinct, firm threads, uniting opposite serous surfaces, especially those which move freely on each other, as the pleuræ and the peritoneal coverings of the abdominal viscera; as will be more fully dwelt on, and illustrated in a subsequent part of this paper. (See p. 528 *et seq.*)

CASE XIII.—In 1837, a child of a month old was brought to me from the county of Westmeath, in consequence of its having been born deprived of the left hand; on examination, I found the forearm of that side presenting, a little above the wrist, the appearance of a perfectly well-formed stump, as it would be found after amputation by the surgeon's knife; with this difference, however, that the mark of cicatrix did not extend across the stump, but was confined to a small circular depression in its centre; the child was otherwise quite perfect, and healthy. Unfortunately, I could not obtain any information as to whether the hand had been found at the time of delivery or not; the poor

¹ Dublin Medical Journal, Nov., 1836, p. 220.

woman having been attended only by an ignorant country midwife. Three cases very similar to the above are described by Dr. Simpson.¹

The most recent case known to me in which the amputation was complete before birth, and the separated limb found, is one related by Professor Martin, of Jena, who has made it the basis of a special essay² on this subject, containing much valuable matter; and the case itself is one of such peculiar interest, that I shall give it in full, as reported by Professor Martin.

CASE XIV.—“John Louis Oswald, the eldest son of healthy, well-made parents, was born on the 29th March, 1849, at Lippersdorf, near Roda, in the duchy of Saxe-Altenburg. The delivery took place without artificial assistance, in the presence of a competent midwife; the presentation was natural, and immediately after the expulsion of the child, it was observed that the left arm was wanting. From the stump, which was attached to the left shoulder, and which appeared to be something less than the half of the humeral portion of the arm, and the lower end of which exhibited a reddish-brown, moist, but not bleeding or suppurating wound, the white bone, according to the statement of a surgeon who was immediately summoned, projected a little. As no other deficiency was found, and as the child did not appear to labor under any illness, the wounded surface was dressed with lead cerate, and in a short time completely cicatrized. The child then throve at the mother's breast so well, that when he was brought to me to Jena, on the 28th of July, 1849, his bodily development was more than ordinary, and he was remarkably lively; the stump was now about one inch and a quarter long, was moved by the child, and exhibited an oblong, roundish, puckered contraction of the skin, from which a smaller reddish elevation, completely skinned over, projected a little.”

“With the placenta, which soon followed the child, came the separated portion of the left arm; this, the surgeon placed in spirit, and it was given to me by the child's mother. It consists of about three-fourths of an inch of the lower half of the humeral portion of the arm, with the forearm and hand. The skin, with

¹ *Op. jam cit.*, p. 226.

² *Ueber Selbstamputation beim Fötus. Beobachtungen und Bemerkungen von Eduard Martin, Jena, 1850.*

the exception of that on the hand, is puckered, *as if after great previous distension*, and is of a grayish brown color; the fingers are somewhat dried in at the tops (probably because the arm was

Fig. 32.



not put into spirit immediately after birth), but exhibit attached, well developed nails." (See fig. 33.)

"On cutting, at different times, in September and October, through the corium, both on the fore and upper arm, the subcutaneous areolar tissue was found remarkably thickened, and condensed with effused blood and colored of a bright red; but the subjacent muscles were in good condition. In the palm of the hand, on the contrary, no trace of this sanguineous effusion was found; the skin here lay close to the tendons and muscles. Except for the puckering of the skin just now mentioned, the arm, all the joints of which are movable, is well formed, and corresponds in point of size to that of a foetus of eight or nine months. The integumental coverings of the surface, where the separation took place, are

Fig. 33.



drawn into a roundish shape, and are blended with the subjacent soft parts into a firm homogeneous mass; from the centre of which the humerus projects about one line, presenting an indented fractured surface.

"As to the history of the foregoing case; the mother, a strong country-woman, thirty-three years of age, who had already been twice safely and easily delivered (in 1845, of a living healthy girl, and at Easter, 1847, of healthy female twins), stated, that about eight weeks before her last confinement, having been previously in perfectly good health, in descending a ladder, which, in her newly built house, was used instead of stairs, fell from the top rung in such a manner, that she turned over on the ground, and lay for a considerable time insensible. Whether the distended abdomen was struck or not, she could not decidedly say. During the first few days after the fall, blood, and subsequently bloody water flowed, from time to time, from the vagina; nevertheless the motions of the child continued; the small parts of it are said to have pushed forwards at the left side of the abdomen, so that the left arm may have lain on the anterior abdominal wall. In addition to the discharge of blood, persistent abdominal pains had followed the accident, without, however, any disturbance of the general health, or any interruption of the birth, which took place on the 29th March."

The history of this case, he thinks, proves the existence of a new cause for the spontaneous amputation, and "perhaps the only mode in which a perfect separation of the part can be produced," which he thinks could not be effected by a ligature alone, and would require, in addition, the agency of some "absolute or relative external cause," inasmuch as the ligature could, he says, only act "on the soft parts down to the bone," which, to use his own words, "except the constricting membrane (or ligature) had formed so early that the bone existed only in its cartilaginous framework, must remain uninjured, or be separated through some absolute or relative external cause," as happened after birth in "one of the cases related in the text." This refers to Mr. Bleek's case, which will be related hereafter. (See p. 520.)

Now really, this objection of Dr. Martin's has but little weight, for in the first place, the very condition which he specifies, namely, the semi-cartilaginous state of the bone, as that in which he admits

that the ligature would act effectually in causing the separation, is that which we all know does actually exist in the fœtus in utero, in a greater or less degree; and especially at the earlier periods of intra-uterine life, when the ligatures are most apt to be formed and to come into operation. But, I believe there will be no difficulty in showing, that in any state of the bone existing before birth, the action of a ligature completely constricting the soft parts and vessels, would, almost inevitably, effect the separation of the member to which it was applied.

He objects, secondly, that the ligature of limbs by organic cords, could scarcely effect a true separation of a portion of a limb; because the cords which constitute the ligature do not, after they have once been formed, spontaneously contract, and so continue to tighten themselves; but in saying this, he quite forgets, that in cases such as we are considering, the growth of the limb within the ligature will tighten it, and increase its pressure just as effectually as if the ligature itself were drawn closer round the limb; which, moreover, is actually the fact, since it has been abundantly proved, that when bands of false membrane have once been formed by the organization of lymph, their invariable tendency is to contract, which they do in some instances with extraordinary force and power; striking illustrations of which are of daily observation, as in cases of burns, strictures of the intestines, &c.; and Mr. Bleek's case, to be related presently, is a remarkable example of the same process, producing powerful and destructive compression.

In this way the integuments and other soft structures are gradually carried inwards, compressing the bloodvessels and nerves, until at length a sufficient supply of nutrient materials cannot be furnished to maintain the growth of the parts below the ligature, and the support and nourishment of the bone, which thus having its strength and vitality diminished, becomes feeble and brittle, and finally separates; perhaps under some movement of the child itself, or exertion of the mother; and it may be here remarked that an observation of Jöerg's shows, that the bones of a fœtus may be fragile without any special cause. (See *Graetzer*, p. 200.)

But a still more cogent and decisive reply to Dr. Martin's objection is supplied by those cases in which, as in *Watkinson's*,

Hecker's, and Fitch's, the limb was completely divided before birth, without any "absolute or relative external cause" whatever, the mother not having sustained any kind of accident.

From the whole account, then, and especially from Dr. Martin's own description and representation of the appearance of the stump, it seems to me quite evident that the limb had been inclosed by some compressing agent, such as a ligature; for he says that "the integumental coverings of the surface, where the separation took place, are drawn into a roundish shape, and are blended with the subjacent soft parts into a homogeneous mass, from the centre of which the humerus projects about one line." Now what but compression, such as would be produced by a cord or ligature tied round the part, could cause such a condition as this? Surely it would not be likely to happen as the result of fracture alone: and he expressly remarks, that the skin of the *forearm* was puckered, "as if after great previous distension," which very state was observed, to a remarkable degree, in Mr. Bleeck's case (see fig. 34, p. 521), which Dr. Martin quotes, and in which the ligature was found closely girded round the limb; and although it is quite possible, nay, perhaps, very probable, that the separation of the bone may have taken place at the time of, or in consequence of the mother's fall, I think it is equally certain, that the limb had been previously strictured, and weakened by the ligature, so as to yield more readily to the violence offered to it.

Now if, as Professor Martin maintains, fracture, occurring two months before birth, was the original and only accident in his case, is it not probable that, in such a healthy child, and under circumstances so favorable to reunion, the fractured bone would have united again, as has been found to have happened in so many instances recorded on unimpeachable authority?¹

It is greatly to be regretted, that Dr. Martin did not see his case in the first instance, nor indeed for four months after birth; as he was thus obliged to describe, at second hand, appearances which he never saw; and the account of which, as furnished to him by others, after such a lapse of time, may, or may not have

¹ See Graetzer, *op. antea cit.*, ch. lviii. p. 187. Marc, *Diet. des Sci. Méd.*, tom. xvi. p. 63. *Bullet. de la Fac.*, 1813, No. 3.

been accurate; and, unfortunately, the latter supposition is, under such circumstances, much the more probable.

Dr. Martin's case is, however, of peculiar interest, for more than one reason; and especially as being, so far as I know, "the only authentic observation of an otherwise healthy, strong child, living for a protracted time after birth, whose separated limb was found and preserved."

It is to be observed here, that several years before the occurrence of Professor Martin's case, Dr. Simpson suggested the idea, that the amputation of the foetal limbs might possibly, in some instances, originate in fracture.¹

The case alluded to by Professor Martin, to prove that "an absolute, or relative external cause" was necessary to effect what the ligature placed on the limb in utero was incompetent to accomplish, is one of very rare and extraordinary interest, as demonstrating indisputably the nature of the agent employed, as well as the great power which such an agency can exert over the limb on which it is applied.

CASE XV.—The case occurred to Mr. Charles Bleeck, of Warminster, in 1835, when in attendance on a patient with her second child. It was a breech presentation, and the body being expelled to the axilla, Mr. B. proceeded to bring down one of the arms, which he did without difficulty, but the other resisted all his efforts; it was, in fact, *so immovably fixed*, that after using as much force as he felt justified in doing, he desisted: in about ten minutes after this, a violent pain brought into the world the head, the arm, and the whole of the secundines at the same moment; the child was alive.

The cause of the resistance was now manifest; from the upper part of the funis umbilicalis, the circulation of which was not at all impeded, passed a very strong and tough band, about an inch and a half long, with its end firmly attached to the surface of the placenta; this band was perforated, and, in the aperture, the arm was grasped so tightly just above the elbow, that the soft parts, which were drawn in as if by gradual compression, and covered with skin, were divided down to the bone; the limb, below the ligature, was enlarged to

¹ Dublin Med. Journ., vol. x. p. 240.

four times its natural size (see fig. 34); the arm was liberated from the band, and the child appeared, at first, to be going on well, but in twenty-four hours it became restless and uneasy; the limb, too, grew hot, put on a livid appearance, and was soon covered with vesications; and its vitality being

Fig. 34.



apparently at an end, at the expiration of forty-eight hours, Mr. Bleeck deemed it advisable to remove it; this was easily effected, and not the slightest hemorrhage followed, although the axillary artery continued to beat slowly.

The child seemed conscious of relief from its incumbrance, and was quiet during thirty-six hours, at the end of which time it was seized with convulsions, and died.

On the foregoing relation, Mr. Rd. Smith, Senior Surgeon to the Bristol Infirmary, who reports the case, observes:¹ "I consider that at an early period of utero-gestation a band of coagulable lymph had been thrown out from the funis to the neighboring part of the placenta; in closing, or being coiled round the arm of the foetus, that this band became vascular, thickened, and tough; thus circumstanced, it would yield but imperfectly to the growth of the limb, which it continued to grasp more and more firmly, and thus, by its continued pressure, produced absorption of the soft parts actually down to the bare humerus. It is easy to understand how readily a struggle of the child might snap off the latter, and this would probably have been the case in the present instance, but that the period of utero-gestation was at an end, and that the bone formed as yet an attachment to the body. If I am right in my conjectures, the above forms an easy solution to the marvellous riddle; and if it may happen thus in one instance, it may occur in several."

CASE XVI.—In 1847, Professor P. Dubois presented, at the Académie de Médecine,² a child, two days old, in whom the middle and ring fingers of the left hand were reduced to the first phalanx, the free extremity of which was rounded, and, for the most part, covered by the skin; but in the centre of the little

¹ *Lancet*, Feb. 17, 1838.

² *Archives Gén. de Méd.*, 1847, tom. xiii. p. 548.

stump was a small wound, or unhealed spot, still moist with blood, proving that the separation of the phalanges was recent.

From the vicinity of these little wounds sprung a filiform prolongation, very fine and very firm, and much longer than the absent phalanges could have been, so that it could not be regarded as the remains of them; a similar lesion existed on the second and third toes of the left foot, and of the right foot also; the last phalanges being wanting, and instead of them a stump, having in its centre the little, unhealed, bloody spot, and the filiform prolongation, like that above mentioned.

The left leg exhibited, a little above the ankle, a strongly marked constriction, a sort of circular depression, narrow and deep, like that which would be produced by the long continued compression of a ligature, but no such agent remained. The great toe of the right foot had, on its first phalanx, a constriction of the same kind. The right leg, also, presented a circular depression in form and situation analogous to that on the left leg, but much less marked.

With the exception of the lesions just described, the child was well formed and well developed. The umbilical cord was only half its usual length; the membranous bag in which the fetus was inclosed appeared to consist only of the chorion, at least the amnion could not be distinguished. The mother did not apply for admission into the clinical hospital for a considerable time after the rupture of the membranes and the discharge of the waters, so that it was not possible to find any vestige of the missing parts.

This case of Dubois' embodies strikingly several of the lesions observed in my first and second cases.

CASE XVII.—The following case, communicated to me in 1847, by Dr. Levert, of Mobile, U. S., I look upon as of especial interest and value; because, in it, there is not only a peculiarly well-marked example of the pathological lesion under consideration, but also of the presence of the ligatures, which I described as the agents under whose action the limb is divided; and in this case of Dr. Levert's, they were found still adhering *in situ*.

"Mrs. J—1, aged eighteen years, advanced to the eighth month of gestation, with her first child, was delivered of a male child, which lived about two hours.

"Great deformity existed; the nose, superior maxillary on the right side, and right orbit, were wanting; the right eye, about one-sixth of its natural size, was placed in the outer angle of what should have been the orbit; there was no optic nerve, nor had it any direct connection with the brain, being attached merely to the integuments.

"But that which makes this case particularly interesting, was the abnormal condition of the extremities; the right thumb was found to be completely amputated, between the first and second joints, and the stump was perfectly healed and rounded; the ring finger of the same hand was also amputated, near its metacarpal articulation, but the finger itself was still attached to the stump by a small ligamentous substance, which appeared to be the remains of the bone. The skin here also was healed, both on the stump and on the amputated extremity itself; around the ligamentous attachment just alluded to, *a small thread-like cord was placed, partially filling up the depression*; it seemed to be composed of organized lymph. One end of this ligature extended along the palm to the extremity of the amputated thumb, the other to the little finger, around the second phalanx of which it was cast, producing a deep groove, without, however, causing any breach of the integuments.

"A similar ligature was placed around the left thigh, just above the knee, where also the same appearances were observed as those just described. These ligatures I saw *in situ*, and there can be no doubt that the amputations were caused by them."

In a letter dated March, 1856, Dr. Levert informs me that "the mother has since been delivered of three children, under his care, with easy and favorable labors, and healthy, well-formed children."

CASE XVIII.—The most recent published case of this accident, with which I am acquainted, in which the limb was completely separated without any other deformity, or imperfection in the child, which survived, is that by Dr. Hecker, of Berlin.¹

On the 20th of January, 1854, a healthy primiparous young woman, of twenty-two years of age, who had not met with injury or

¹ Monatschrift für Geburtskunde und Frauenkrankheiten, Berlin, Band. iii. Heft. 6, June, 1854, p. 401.

accident of any kind, during gestation, gave birth to a full-grown, well-nourished, healthy boy; in whom, however, the left hand and the greater part of the forearm were entirely wanting; the smaller portion of the latter formed a stump which, immediately after birth, was alternately strongly flexed against the upper part of the arm, and was again completely extended. A closer examination of the parts showed that the remnant of the forearm had become slightly attached to the lower portion of the upper-arm, that it was an inch and a half long, and that it terminated in a surface which, in appearance, exactly resembled a well, and long healed stump left by amputation. The skin covering this surface, which was perfectly sound, presented in particular spots, evident cicatrix-like puckerings, which were, however, nowhere attached to the parts beneath, but were perfectly movable over them; and when drawn into a state of tension, immediately lost the appearance of a scar, and could not be distinguished from the rest of the skin; when the tension ceased, the wrinkles reappeared. (See fig. 35.) At the inner and upper side of this sur-

Fig. 35.



face, was a semilunar pouch of the skin, containing *three projections, about a line in height*, and resembling the comb of a cock, of the same color as the skin, and exhibiting no indication of a nail

or other attribute of a finger, but appearing to be simple papillary growths. Through the cutaneous coverings of the stump, two ends of bone could be distinctly felt, but the fleshy condition of the stump itself prevented the possibility of demonstrating the existence of two bones through the muscles. Nothing abnormal was observable about the elbow-joint; from the perfect action of the extensors and flexors in the stump, it must be inferred, that those muscles had not lost their regular points of attachment. The left upper arm exhibited the same dimensions as the right, neither was there, in general, any difference between the development of the right and left side of the body; in no other part was any deviation from the normal condition discoverable. The child thrived well.

The most thorough and diligent search was made, both externally and internally, for the amputated portion of the limb, but it could not be found.

Dr. Hecker discusses, at some length, the question, whether such a condition of the parts should be considered as the effect of a primary malformation, or of intra-uterine separation of the limb, and correctly decides in favor of the latter. "If," says he (p. 405), "we take into consideration the cicatrix-like puckerings of the skin, the presence of both bones in the stump, the equal development of both upper arms, as well as the absence of any other anomaly in the child's body, I think we must give up the idea of an original malformation, and look upon the defect as caused by spontaneous amputation:" he might have added, that the cohesion of the surfaces on the forearm and upper-arm showed that an inflammatory process had been concerned in the production of the lesion.

The disappearance of the amputated limb he ascribes, and with great probability of truth, to its having been, as I have elsewhere insisted on (see p. 535), separated at an early period of intra-uterine life, when very small, and dissolved in the liquor amnii; and in support of such a view, he refers to the fact already noticed (p. 216), of the disappearance of the foetus in blighted ova, so as not to leave behind even a trace of its existence. That in this case, the separation took place at an early period, he considers deducible from the state of the stump; "for while, in many cases, the wound in the skin is noted as being at birth still un-

healed, and the stump as still moist, we have here a tolerably smooth cutaneous surface, the puckerings of which have no longer any resemblance to a cicatrix, but appear as merely wrinkles, a condition such as is observed on old stumps left after amputation with the knife."—(p. 406.)

Dr. Hecker rejects as obsolete, the opinion which attributed the spontaneous amputation of limbs in utero, to the operation of gangrene: and adopts my view of ligatures acting as the compressing agents which effect the separation; and after alluding to Professor Martin's case, and Dr. Simpson's previous anticipation of the probability that fracture might lead to such a result, he goes on (p. 407) to say, that, in his case, there was no room for suspecting any such cause of the lesion; as, from the history, it appears that no violent injury had happened to the mother during her pregnancy; and therefore, he willingly adopts "the opinion, that the limb was removed by ligature, and, as a matter of course, by Montgomery's threads."—(p. 408.)

CASE XIX.—21st March, 1856, I saw at the South Union Workhouse, a female child of a pauper named Rooney, aged seven months, which was born wanting the left forearm, from about an inch and a half below the elbow; this portion of the arm was then about two inches long, had perfect motion at the elbow-joint, and at its extremity presented the appearance of a nicely rounded and well-healed stump after amputation. The integuments were quite movable over the ends of the bones; on the inner side of the stump there was a healed cicatrix, and on the outside a dimpled depression; the appearance of both being somewhat like that described, and represented in fig. 35, p. 524; but there was no attempt at rudimentary reproduction of the lost fingers.

The child was otherwise quite perfect, and rather pretty. In this case, there was, with the single exception just mentioned, such a remarkable similarity to Hecker's, that the description of the one might almost be adopted as that of the other.

CASE XX.—In the *Medical Times and Gazette* for the 10th of December, 1853, is the following case: "By the courtesy of Mr. Maclaughlin, of Preston Lodge, Clapham, under whose professional care the little patient was born, we have been allowed an opportunity of examining the specimen of congenital abnor-

mity whose full-length portrait is given below. It is the first living child of a chimney-sweeper's wife, aged about thirty-two, and is now rather more than six weeks old, thriving, and promising to do well. It was born after a short labor, in which no unusual circumstance occurred; the placenta was much softened, but the cord was natural in length and thickness, and nothing was observed in the decidua throwing any light on the cause of the deformities. As may be seen, the four extremities are, with the exception of short stumps of arms, entirely wanting. The head and trunk, with the spine, pelvis, and genitals, are, as far as can be ascertained, perfectly normal in construction. Marking the parts where the thighs have been removed, there is, in each case, a small nipple-like fold of skin, which is crossed by obscure lines, as of cicatrix; but there is not the least trace of a rudimentary member. It is doubtful whether any portion of the femur remain or not, but if it do, it cannot be more than the articular head and neck, and from these, the overlying skin is perfectly loose. In each upper extremity, however, the bone is well formed, and of natural size, to the point where it abruptly terminates, and is adherent to the skin, in which latter are several very distinct lines of cicatrix. They are, in fact, perfect stumps, and from the power of elevation possessed by the child, appear to be just long enough to secure the attachment of the deltoid muscles; a point which is of great importance, since, should they develop *pari passu* with the infant's growth, it is not impossible but that some mechanical contrivance may be adapted to them, at a future time.

"From the condition of the truncated extremities, as above described, it is quite evident, that the deficiencies have been produced by a series of intra-uterine amputations, and not by arrest of development. It becomes, then, an interesting question, as to how these amputations were effected. The circumstance that no remains of the wanting members were distinguished

Fig. 36.



among the decidua, only proves that they occurred at a very early period of foetal life; a fact also made certain by the soundly-healed condition of the stumps. The proved occasional causes of these accidents are, 1st, constrictions of the limbs by bands of false membrane, or by twisting of the umbilical cord; and, 2d, compound fractures; the latter extremely rare, and probably only efficient towards the latest periods of utero-gestation."

After making some observations on these different agencies, the writer proceeds:—

CASE XXI.—"We will here mention briefly, on account of its interesting connection with the subject in hand, a case which we saw in St. Bartholomew's Hospital during the summer of 1850, under the care of Mr. Stanley. The appended woodcut will ex-

Fig. 37.



plain the condition of things, better than verbal description. There was a constriction of the lower part of the right thigh, which, in front, extended quite down to the bone, but behind, allowed the vessels, nerve, and tendons to pass intact. The patient was a healthy boy, aged two years and a half. He had talipes varus of both feet, and deformed fingers on each hand. Two of the latter were bulbous at their ends, and had evidently been constricted. The lower part of the leg was well developed, and the boy could walk upon it, though only awkwardly, as he could not bend the knee, or raise the extremity much forwards. It was not

known that any state of the cord, &c., was observed at the time of birth, explanatory of the constriction of the thigh; and as to those on the fingers, it is quite impossible that a funis could constrict so small and tapering a body as a foetal finger. We should incline, therefore, to refer this case, also, to the influence of bands of false membrane; and it is instructive, as an example of an incomplete amputation."

Now, with regard to the first of these two cases, I see no reason to doubt that the removal of the arms was accomplished by the kind of amputation which we have been considering; but, I confess, I cannot understand how such a process could effect the entire removal of the femurs, even into the very acetabula.

CASE XXII.—Dr. Rigby informs me that, some years ago, he met with a remarkable case of amputation of the arm before

birth, which was at the full term, and the child survived to womanhood: the stump was conical and covered with thin skin, through which a projecting spicula of bone could be felt; the separated arm was found, but not seen by Dr. Rigby; the parents assured him that it was not much smaller than the other. This case is briefly noticed in the *Brit. and For. Med. Rev.*, vol. iv. p. 467.

Now, with regard to these ligatures, and their application round the limb, so as to produce such an effect, there are at least four questions demanding consideration.

1. How are they formed, or produced?
2. How are they applied round the limbs?
3. How does it happen that they do not more frequently cause the complete separation of the limb; which is, in the majority of cases, only partially divided?
4. How do they produce their effect?

1. As to the mode of their production; I believe hardly any one now doubts that they are, as I originally suggested, the result of inflammatory action; by which plastic lymph is poured out, and organized, taking the form of threads, or bands, as it is well known to do, in many other situations; and in none, more remarkably than that of the uterus and its appendages: and the adhesions which have been so often found between the cutaneous surface of the fœtus and the placental amnion, show clearly that these textures are not exempt from such an action.—(See Cases XLVII., XLVIII.) That lymph thus effused, and taking the form of a false membrane, has a tendency to form bands or threads, is a matter of universal observation; which bands are found stretching across from one point to another, in the cavities of the pleura, pericardium and peritoneum, where they acquire, not unfrequently, great strength; and in the latter situation especially, have been occasionally the cause of most important, and sometimes fatal effects; one or two examples of which I shall here relate.

CASE XXIII.—Several years ago, I attended, with the late Mr. Gregory, the post-mortem examination of a woman who had died with all the symptoms usually attendant on strangulated hernia, although no evidence of that affection could be detected during life. On opening the abdomen, the cause of death was at once manifest; at some former period, she had had peritoneal

inflammation, from which adhesions of the serous surface of the intestines had been formed in various situations; and in one place, a band of false membrane had been thrown across, like a little bridge, or arch, from one point of intestine to another, forming underneath it an open space; into this, a free coil of intestine about two inches long had insinuated itself, became completely strangulated, and so caused the woman's death.

CASE XXIV.—The late Dr. Houston, of this city, has recorded¹ a case very similar to the above. A lady, immediately after the birth of her fourth child, complained of severe pain in the abdomen, which became violently aggravated, after the discharge of the placenta. No evacuations could be procured from the bowels; the belly became swollen, the pulse rapid, and she speedily sank with symptoms of the most acute peritonitis, thirty-four hours after delivery. On examination, the uterus was found to have contracted well; "the entire peritoneal surface exhibited all the marks of intense inflammation, and the ileum, to the extent of about three feet, was completely sphacelated, black, and filled with blood. A band of lymph, two inches long, and of considerable thickness and solidity, was attached, by one end, to the right ovarium and Fallopian tube, and by the other, formed a tight noose around the mesentery of the mortified gut, which thoroughly strangulated and deprived it of circulation. The extravasation of blood which had taken place into the cavity of the intestine, and among its tunics, marks the tightness of the ligature."

"It would appear," adds Dr. Houston, "from the absence of any disagreeable symptoms during pregnancy, and the rapidity and violence with which they followed the birth of the infant, aggravated still more after the discharge of the placenta, that the adhesion between the ovarium and mesentery had been contracted while the uterus was high in the abdomen, and that the descent of that organ, after parturition, drew tight the band which strangulated the bowels."

CASE XXV.—A case still more apposite to our present subject, has just been published by Dr. M. Schuller.² A child five

¹ Dublin Hospital Reports, vol. v. p. 320.

² Wochenblatt der Zeitschrift, der Kaiserl. Königl. Gesellschaft der Aerzte zu Wien, Sept. 3, 1855, p. 569.

days old, *whose mother was laboring under peritonitis*, was affected with obstinate constipation and incessant fecal vomiting, and died when nine days old: on examination, it was found that a membranous band, springing from two different parts of the mesentery, had encircled the small intestine; and to its action, as a ligature, strangulating the intestine, Dr. Schuller justly attributes the death of the child.

If to these three cases we add Mr. Bleeck's (p. 520), we have four striking illustrations of the great power that may be exerted on living textures, by bands of false membrane formed under inflammatory action: and when we recollect how readily such constriction leads to the interstitial absorption, and disjunctive atrophy of very firm and resistant structures, we need hardly be surprised to find that tissues, so soft and compressible as those of the foetal limbs at early periods of intra-uterine life, should yield and give way before such an agency; especially considering that, once the ligature is firmly fixed around the limb, its compressing power is daily augmented, on the one hand by its own contraction and on the other by the growth of the body within its grasp.

2. As to the way in which these ligamentous threads or bands get applied and bound round the limb so as to constrict it, as in my case; I must confess myself still unable to offer a satisfactory explanation: if, as in the case of the umbilical cord, one end of them were fixed by attachment to the membranous envelops of the ovum and the other end to some part of the foetus, we could then easily understand that in some of the constant movements of the latter, it might get a limb entangled in the ligature, and draw it tight around it; but in my case such is certainly not the fact; for in it, the threads pass from the hands to the ankles; both of which parts are seriously injured by them. In Mr. Bleeck's case the arrangement is more simple and the explanation less difficult; for we may reasonably suppose the arm to have passed accidentally into the opening in the strong band of false membrane, as the coil of intestine did in Case XXIII., which I saw with Mr. Gregory, and then by its own growth and the contraction of the band, to have become strangulated.

Graetzer, one of the most comprehensive and accurate of the writers who have discussed this subject, and my explanation of

it, clearly assents to my view, but adds:¹ "It still remains unexplained how those firm thread-like plastic exudations originate, and twine round the foetus so closely as to produce the most important consequences; neither the history of development nor pathological anatomy affords any explanatory results with reference to this point. But with respect to the consequences of the constriction, they occur as in the adult; and as in the latter case we can effect amputation by the ligature in consequence of the inflammation and gangrene produced thereby, so in this instance, also, a species of spontaneous amputation may take place."

Professor Gurlt, of the Royal School of Medicine at Berlin, and author of a work on pathological anatomy, whose investigations render him peculiarly qualified to form an opinion on such a subject, has written a commentary on my first paper,² in which he adopts as correct my explanation of this curious fact, and, in addition, undertakes to account for the formation and application of the ligatures.

He commences his observations by rejecting *in toto* the notion of the agency of gangrene; his words are: "To explain this most remarkable phenomenon, the utterly unfounded hypothesis has been formed, that these spontaneous separations are the result of gangrene, although there are no traces of it to be discovered on the stumps, they being actually, to a certain extent, healed and no change of color to be seen;" and he immediately adds: "A case lately observed by Montgomery, of Dublin, appears to contribute a natural explanation of this remarkable fact, inasmuch as it indicates the cause of this separation." He then repeats the details of my first case and proceeds to say, he "believes that both the formation of these threads and the amputation of the limbs, which are most probably in all cases produced by them, may be explained by the history of the formation of the foetus." He then enters into a minute detail of facts well known to all who are acquainted with the mode in which the development of the foetus takes place, and observes: "I look upon these threads as prolongations of the egg membrane, from which the foetus grows, whether this skin (or membrane) be taken as the navel bladder

¹ Op. jam cit., sect. 18, pp. 76, 77.

² See Medicinische Zeitung, January, 1833, 1834.

(vesicula umbilicalis) or the amnion:" and he subsequently objects to their being considered as formed by organized lymph, which I considered them to be, and still remain of the same opinion.

The prolongations of the membrane, Gurlt thinks, are afterwards by the constant motions of the foetus twisted into slight but firm cords or threads, which may involve different portions of the foetal limbs (as we sometimes find the umbilical cord several times round the neck, or other parts of the child's body), so as to stricture them and cause their separation; and in this way Professor Gurlt explains the presence of the ligatures concerned in the production of spontaneous amputation. I dissent from this as a general explanation, for a reason presently to be stated, but it is only justice to the author to mention that the condition of both the children which I examined was, in other respects, such as favors his theory, for whenever such unnatural adhesion takes place between the amnion and the foetus, it gives rise to monstrosity of a very marked kind (see Cases XLVII., XLVIII.); and this is observable in both these cases, and in several others also; in one, there is protrusion of the brain, and monstrous formation of the head in other respects; and in the other, the liver, stomach, and great part of the intestines were contained in a hernial sac, external to the body. But, notwithstanding the support thus derived from analogy, there is one circumstance which appears fatal to this explanation, when applied to the first case described by me, which is that in all cases where these membranous connections have been observed giving rise to monstrosity, one end of the cord or thread-like band has always been found attached to the amnion, and the other to the foetus; but, here *both* ends of the cords are attached to the limbs, and afford no evidence of having been connected with the amnion; and it must be borne in mind that, in several of these cases, there was no other defect or deformity in the child as in Watkinson's, Martin's, Hecker's, one of Chaussier's, Dr. Rigby's, in the child brought to me from Westmeath, and in the one recently seen by me at the poor-house (see p. 526); and Dr. Simpson, describing the three cases which he saw, after stating that the mutilated extremity presented in each the exact appearance of an artificial

stump, adds, that "no deformity whatever existed in any part of the body, except in the mutilated arm."

3. As to the question why these ligatures are so often found only to have acted to a certain degree in the removal of the limb; the reason seems obviously this; the unhealthy inflammatory action which gives rise to the formation of the ligatures, generally produces at the same time, or eventually leads to, such an amount of functional disturbance and organic malformation in the foetus, as are incompatible with the maintenance of its life, long enough for its arrival at maturity, or for the disjunctive action to produce its full effect. Of this we have illustrations in my first two cases, as well as in Zagorsky's and others, where there are many serious pathological abnormalities; whereas, in the cases by Watkinson, Professor Martin, Dr. Simpson, Hecker, and in others, seen by myself, where the amputation was completed, these other pathological lesions did not exist; and the children came to maturity, and were born alive, but wanting the limb.¹

4. As to how these ligatures produce their effect, and cause the separation of the foetal limb. In addition to the more general observations made at pp. 518, 531, it may be here remarked that the ligature, being once applied and made fast round the limb, begins to contract with considerable force; and, on the other hand, as the latter grows, the former becomes proportionally still more tightened upon it; carrying in the integuments and other soft parts, and so, by degrees, compressing the bloodvessels, until, at length, a sufficient supply of blood cannot be transmitted to maintain the growth of the parts below the ligature; and thus, also, the nutrient vessels of the bone being obstructed, the latter has its vitality reduced, becomes feeble and brittle, and finally separates, under some motion of the foetus itself, or of the mother.

I feel persuaded that the removal of limbs in this way, which have been expelled from the uterus apart from the child to which they belonged, is by no means so uncommon an occurrence as the

¹ See Cases I., XIII., XIV., XV., XVIII., &c. See Geoffroy St. Hilaire's investigations, in his work on *Monstruosités Humaines*; Meckel's *Handbuch der Pathologischen Anatomie*, Bd. ii. S. 138; and a paper on the Diseases of the Placenta, by Dr. Simpson, in the *Edin. Med. and Surg. Journ.*, vol. xlv. p. 305, *et seq.*

paucity of cases hitherto recorded would at first sight lead us to conclude; and the reason appears to me to be this: formerly, when the peculiar nature of this lesion was not understood, or, indeed, its existence known, when the separated portion of limb was not accidentally discovered, the imperfection seems to have been considered quite as a matter of course, and without further examination, as arising from imperfect development, or monstrosity; and, consequently, no search was made for the deficient part; and, even if search were made, the amputated member might have been so small, or so altered, as to escape undiscovered, involved in the membranes, or buried in coagula, even though the child to which it belonged had attained considerable size; because its separation may, as we have seen, take place a long time previous to birth; the early periods of foetal life being those in which this lesion would be most easily produced by such an agent as a ligature, when the foetal limbs are so small, soft, and compressible. In Schaeffer's case (p. 510), the child was of eight months, but the separated foot, only of three; in Zagorsky's case (p. 511), the child was of five months, but the foot presented a development corresponding only to ten or twelve weeks; in these two cases, the feet were still pendent by the thread or cord; but had it been otherwise, they might, very readily, indeed, have escaped detection; especially if those about the patients, knowing nothing of the existence of such an accident, had no idea of seeking for them; and here, I think, we have a fair and sufficient answer to Haller's objection, quoted p. 508.

Dr. Simpson has published a very ingenious essay,¹ to show that there takes place, on the stumps of limbs that have seemingly undergone an early spontaneous amputation in utero, a rudimentary reproduction of the amputated parts; in consequence of which, on the end of many such stumps there is observable a projecting mass, or nodule, varying in size from a small cutaneous ridge, to the bulk of a walnut, and having, protruding from its surface, one, two, or more, still smaller fleshy divisions, or projections, which are provided, at their extreme points, with nails; which fact he justly regards as highly interesting, from being, as he believes it to be, an effort or tendency *in the human*

¹ Obstetric Works, vol. ii. p. 374.

subject towards the reproduction of a lost extremity; which we so frequently see accomplished, and with a great degree of perfection, in several of the lower classes of animals, and especially in the Crustacea; but in the higher classes, this power of reproducing lost compound parts and organs seems almost entirely absent; in man this is strikingly the case, and in him even portions of individual tissues, when destroyed or removed, are, in general, but imperfectly restored.

"To this general law," says Dr. Simpson, "there are the following exceptions in the human subject."

1st. "When the part removed is primitively of a lower type of organization than that of the general body, restoration sometimes occurs."

CASE XXVI.—"Thus, in a case of a child born with an additional thumb, or with a thumb double from the first joint, the outer, or smaller one, was amputated by Mr. White, of Manchester. It grew again, and along with it, the nail. Subsequently, Mr. Bromfield, of London, a second time carefully removed this superadded portion of thumb, and turned the ball of it fairly out of the socket. 'Notwithstanding this,' adds Mr. White,¹ 'it grew again, and a fresh nail was formed.'"

2d. Dr. Simpson says he has "seen a distinct, but imperfect nail grow on the end of the second phalanx of the finger after the complete amputation of the first phalanx. Similar instances of nails, and, consequently, of the matrices of these nails, becoming regenerated on the tips of fingers, amputated through their first joints, have been recorded by Corvisart, Ausiaux, Blumenbach, and others."

3d. "When, in the human subject, the removal of a compound part, such as a portion of an extremity, is effected in early foetal life, and, consequently, at a time when the physiological powers of the young human being are more assimilated to the reparative and other powers of animals of a lower type in the animal scale, the lost part seems capable of at least a partial and rudimentary restoration. In the animal kingdom generally, we find the power of regeneration greater in the inverse ratio of the degree of development, or age of the individual." "So, while in

¹ Regeneration of Animal and Vegetable Substances, p. 16.

the human subject, after birth, we never see any trace of the reproduction of a limb after amputation, we have the contrary, as I believe, evidence of the possibility of their rudimentary regeneration in the appearances sometimes seen on the ends of stumps, resulting from spontaneous amputation in early foetal or embryonic life."

Dr. Simpson says that in most of the cases where he had observed this rudimentary reproduction, the amputation had occurred in the upper part of the forearm, especially the left, the rounded end of the limb having exactly the appearance of a stump after amputation, and being well covered with soft parts. "Two points of the skin, or rather of the subcutaneous tissue, are found adherent to the ends of the ulna and radius, and present a depressed, or umbilicated form, particularly when the forearm is flexed and moved, and the fissures of the skin run in converging lines to these two points as centres. Midway, and a little in front of these two points, the rudiment of the regenerated extremity is situated, in the form of a raised cutaneous fold, or fleshy mass, or tubercle, and having on its surface one, two, or more smaller projections, or nodules, furnished with minute nails."

CASE XXVII.—"In the instance given for illustration in the

Fig. 38.



accompanying wood-cut (fig. 38), from a young woman of eighteen years of age, four such imperfect fingers are seen, two of them tipped with nails. In this, as in most other cases, the left arm is

the seat of the mutilation, but I have seen the right similarly affected."

CASE XXVIII.—"The wood-cut (fig. 39) represents the stump

Fig. 39.



of the left forearm of a foetus of the seventh month preserved in the Obstetric Museum of the University of Edinburgh. There are five small rudimentary fingers tipped with minute nails, in the usual position on the end of the stump. But the case is principally remarkable for the circumstance, that the cicatriza-

tion over the ends of the ulna and radius is not complete. There is an aperture at the end of the radius, through which the end of the bone can be felt, when the point of a pin is passed through it. The ulna projects to the cutaneous surface of the stump, and has a small wound, or circle of uncovered granulations still around it; or, in other words, the cicatrix of the stump is as yet incomplete, exactly as in Schaeffer's case." (See fig. 30, p. 510.)

Such is the substance of Dr. Simpson's account of this curious and highly interesting subject, which I regret my experience does not enable me to illustrate by any confirmatory cases observed by myself. Hecker's case (fig. 35, p. 524) bears a striking resemblance to those figured by Dr. Simpson, and is, I believe, an example of the attempt at reproduction of lost parts. I have elsewhere (see p. 542) remarked upon the singular frequency with which the lesions which form the subjects of consideration in this paper, are observed on the limbs of the left side, rather than on those of the right.

CASE XXIX.—When I met with my first case (fig. 27), the threads forming the ligatures seemed so fine, and apparently possessed of so little strength, that I felt a doubt that they would be able to resist the force exerted by the growth of the parts confined by them; and by way of experiment, I tied a piece of thin twine round the stem of a young poplar tree; and after two or three years, so great was the disproportion between the portion of the

stem within the ligature, and the other parts of it, that I thought it necessary to cut away the ligature, to prevent the tree from snapping across, when bent by the wind. I may just observe here, that illustrations of this kind of lesion occurring spontaneously are not unfrequent in the vegetable kingdom; I have seen the branch of a tree nearly severed by another branch lying across it; and the two subjoined figures represent this injury under other, and rather curious circumstances.

CASE XXX.—In fig. 40, is shown a carrot which grew through

Fig. 40.



Fig. 41.



a small hole in a flat bit of iron, which happened to be in the ground where it was growing: it is, in consequence, very nearly cut in two.

CASE XXXI.—And in fig. 41, are two of the same roots, which, by simply crossing, and being pressed against each other, as they grew, are both so nearly cut across that there can, I think, be little doubt that had they remained some time longer undisturbed, one or both would have been completely severed.

Action of the Funis Umbilicalis.—There is another agent of a perfectly natural kind, and altogether different from those we have been considering, the funis umbilicalis; which, although from its character we could hardly anticipate its doing so, has been very frequently, indeed, found to have acted in a remarkable manner on the limbs of the foetus, even dividing their soft textures down to the bone; so that, if its action could be continued

sufficiently long and with sufficient force, it might ultimately cause the complete amputation of the part acted on; this, however, seems hardly possible, because the amount of compression necessary to produce such an effect, would almost certainly stop the circulation through the umbilical vessels, and so put an end to the child's life: and even if this kind of constriction could, and did actually produce the separation of a limb, its agency in the operation would, in all probability, escape detection; for this reason, that as soon as the limb was divided, the coil or coils of the funis having no longer any support to retain them in situ, would drop off, and, unfolding, might exhibit no evidence of having acted as a ligature. However, one of the most eminent authorities of the present day, Professor Vrolik, of Amsterdam, gives an unqualified opinion on the affirmative side of the question. Speaking of the effects occasionally produced by the coiling of the funis, he says: "A circumvolution of this kind may sometimes become dangerous: 1. By acting as a ligature round the neck and producing strangulation of the foetus; 2. By constricting one of the extremities, and producing the *spontaneous amputation* of Montgomery;" and in another place he states this mutilation to be "produced by constriction of the umbilical cord, or by pseudo-membranes."

In the ordinary free, and, as we may say, floating state of the funis, and considering its very smooth and lubricated surface, which must give it a tendency to move from very slight causes, we could not suppose it likely to exert much compressing force on any part of the foetus, nor, indeed, capable of doing so; but then, the usual simple disposition of it is, not unfrequently, departed from: sometimes it encircles one part two or three times, as in fig. 42; or its coils may get curiously entangled and form a knot around a limb, as in fig. 43: and in Case XXXVII., it may get wound round two or more parts, of which one is comparatively fixed, as the neck or trunk, and another full of motion, as an arm or leg, as in Case XXXVIII.; and then by the movements of the latter, it may be drawn so tight as to cause injury to a limb or some other part, or the child's death: or again, it may become morbidly adherent at some point, and then the portion in-

¹ Todd's Cyclop. Anat. and Phys., vol. iv. pp. 947, 966.

tervening between that point and the umbilicus may be rendered tense, as the parts it lies on become more developed, as in Case XXXIX.; or there may be conjoined the two last named conditions, as in Case XL. In Mr. Bleeck's most remarkable case the funis was only partially, or indirectly concerned in the production of the injury done to the child; the constriction being made by a band of false membrane thrown across from it to the surface of the placenta.

I shall now proceed to give illustrations of these several varieties.

CASE XXXII.—Several years ago, while I was preparing a paper on this subject to be read at an evening meeting of the College of Physicians, held to receive the members of the British Association on the 8th of August, 1835, I received a most interesting preparation from Dr. W. O'B. Adams, in which the coiling of the umbilical cord twice round *the left leg* of the foetus at three months, had so deeply indented it, that it really seemed on the point of being separated. (See fig. 42.)

CASE XXXIII.—Not long after the above I met, in a patient of my own, another instance of the same injury, produced by the same means on the left thigh just above the knee, in a foetus at about the same period of gestation as the foregoing: in this, the cord was not only coiled round the limb, but had in addition *formed a knot on it*. (See fig. 43.)

I am very much disposed to believe that Morgagni witnessed a fact of this kind; at least his description of the appearances in a monstrous foetus between the fifth and six month, greatly resembles it; of which he says:—

¹ In both figures, 42 and 43, the cord is removed from the strictured part where it originally lay, in order to show more distinctly the effect produced by it; the two preparations are preserved in my museum; as are also 27, 28, 40, 41, 45, 47, 48.

Fig. 42.¹



CASE XXXIV.—“All the limbs were in a very bad state; the upper limbs from the elbows downwards; for to the arms, which were very short and distorted, distorted hands were like-

Fig. 43.



wise added. And the inferior limbs terminated, likewise, in distorted feet, *but the left leg was either broken, from the funiculus umbilicalis having been applied round it*; or was more distorted than the other parts:¹ and he afterwards, with great reason, conjectures that the binding of the cord round the leg may have been the cause of the child's death, by interrupting the circulation through it.

CASE XXXV.—In 1840 Dr. Nixon exhibited before the Pathological Society in this city a foetus of three months, around the thigh of which the cord had formed a ligature a little above the knee; by which the limb was indented down to the bone.²

CASE XXXVI.—At a meeting of the same Society on December 6th, 1845, Dr. Beatty exhibited a preparation, calculated, in

¹ Epist. xlviii., art. 53, vol. ii. p. 758, of Alexander's translation.

² Dublin Med. Journal, vol. xix. p. 327.

his opinion, to illustrate my views "as to the cause of the occasional amputation of the limbs of the foetus in utero. The specimen was that of a foetus in the fourth month, round the left arm of which was a deep groove, approximating to a complete separation of the extremity. In this groove had been lodged at the time of expulsion of the foetus a coil of the funiculus, which had acted as a ligature."¹ (See fig. 44.)

It is a very curious fact that in every one of these cases of impressions made by the funis, as well as in several others, the injury was sustained by the *left leg*, except Case XXXVI., and there it was the *left arm* which suffered.

In the following instance, a knot was superadded to the coiling of the cord.

CASE XXXVII.—Dr. Schwabe has related² a case in which a patient expelled a mole containing a foetus of three months, the surface of which as well as the inside of the amnion, was covered with firm reddish deposit. The umbilical cord was wound round the right leg a little above the ankle, where it *formed a knot*, by which the development of the parts was completely prevented and the foot nearly separated from the leg; the integuments, however, were not in the least degree altered.

CASE XXXVIII.—Dr. Buchanan, of Columbia, Tennessee, laid before the Medical Society an account of a case in which the cord engaged both the neck and thigh.³ The foetus was between three and four months old and perfectly formed, except a flattening of the head laterally. The umbilical cord was twisted about the thigh and neck; it passed from the umbilicus under the right thigh just above the

Fig. 44.



¹ Dublin Hospital Gazette, Jan., 1846, p. 153, and Dub. Quart. Med. Journ., N. S., vol ii. p. 533.

² Siebold's Journal, Bd. xvii. St. 2, 1838.

³ American Journal of Med. Sci., Aug., 1839, p. 522.

knee-joint, and, coiling completely round it, passed under itself and ascended in front of the chest, to the right side of the neck, around which it was twined twice, or rather twice and a half, so that two coils were seen in front of the neck and three behind; it then passed in front of the left shoulder, to the placenta: under such circumstances, it is evident that any efforts made by the child to extend the thigh tightened the cord about the neck, and also about the thigh. He thinks it very fair to conclude that the foetus thus situated, came by its death either from the compression of its throat by the cord or by obstruction of the circulation in the latter, or by both; at many points where the cord twisted on itself, it was very much compressed or rather atrophied. But his object in communicating this case, he says, is to call attention to the effects produced upon the thigh by the twisting of the cord around it. At the point of compression, the integuments only intervened between the cord and the bone, all the other parts having disappeared; but the limb below the ligature appeared as fully developed as its fellow, and the integuments immediately under the ligament appeared sound. He adds in conclusion: "Now it is highly probable, had the child lived to its full time the leg would have been amputated by the process of absorption carried on in consequence of the pressure of the cord around the limb." Vrolik has delineated a coiling of the cord somewhat resembling the above. (See fig. 597, in his article "Teratology," in "Todd's Cyclopædia.")

CASE XXXIX.—Meckel gives an account¹ of a foetus of the third month, in which the funis, after being indented to the depth of half an inch into the right scapular region, stretched thence, downwards, to the right thigh and leg, to which it was intimately united by morbid adhesions.

CASE XL.—And Wrisberg has minutely described² and delineated a still more striking instance of a deformed foetus of the fourth month, in which the umbilical cord, on leaving the abdomen, ran first over the left shoulder and round the back of the neck, and then encircled completely the right upper extremity

¹ *Pathol. Anat.*, Bd. II. S. 137.

² Sandifort, *Thesaurus*, tom. iii. p. 235, tab. 11, fig. 5. See also Van de Laar, *Obs. Obstet. Med.*, p. 41, and tab. 11.

immediately below the shoulder. To all these different parts it was morbidly adherent; and at the point at which it encircled the right arm, it strongly constricted the soft parts. In its further course, the cord, after running again over the left shoulder, returned a second time to the right arm, and crossed over it above the elbow, impressing another furrow or indentation upon it, at the point of contact. This case differs from all the others which have as yet come under our observation, in the fact of one arm undergoing this peculiar lesion in two different places, under the influence of the same agent.

If we review the cases here recorded, we shall find them to range under some of the following heads:—

1. Those in which the limb was completely separated, and found.
2. Those in which the separated limb was not found.
3. Those in which the limb was not completely separated.
4. Those in which the children were born alive, and not otherwise deformed.
5. Those in which the children were born alive, but otherwise deformed.
6. Those in which the children were born dead, whether otherwise deformed or perfect.
7. Those in which the ligatures were present.
8. Those in which only the effects of those ligatures were discoverable.
9. Cases of indentation by the cord.

Having thus alluded to the impression made on the foetal limbs by the umbilical cord, and the mode in which that circumstance may put an end to the child's life, I may be permitted to notice an accident to which the cord itself is liable, and of which several instances are met in practice. I allude to the formation of distinct knots, such as one might form on any string, the ends, or even one end, of which was free; and in the case of the child in utero, the formation of the single knot, as it is generally called, is not difficult to conceive: but there is one of a very curious kind, of which I have seen but two instances, and it is so complicated and requires for its formation so much dexterity and management to imitate it, that I feel at a loss to understand how it could have been formed in utero.

CASE XLI.—But so it certainly was, for I myself discovered its existence and removed it from the child, which was stillborn, but recovered, and is now alive and well; in this instance the coils of the knot were drawn very tight, and this, I think, happened during the expulsion of the child through the pelvis; this is the form of the knot (fig. 45), which is, I believe, generally called the figure-of-8 knot.

Fig. 45.



But whatever may be the mode or mechanism of its formation, one thing is certain: that if its coils should happen to be drawn tight by the child, in its movements in utero, or during its expulsion from the uterus, its life would be inevitably lost.¹

Some of the cases hitherto related, suggest a passing reflection as to how much more injuriously external violence and evil influences are often found to act on the unborn child than on the mother in whose womb it lies.

CASE XLII.—I saw a woman, eight months pregnant, fall from a window, twenty-five feet, into the stony street, on her face; her hip-joint was dislocated, and her face and hands cut, but the uterus was not ruptured; she was delivered that night of a dead child, which had some of its bones broken, and had sustained several other injuries; she recovered perfectly.

Graetzer, after relating cases of intra-uterine fractures, recorded by several authors, observes that, on reviewing these cases, it appears that, in some, the cause was purely mechanical, and "had less effect on the mother than on the foetus."²

Professor Martin's case, already related, may be another illustration of this remark; but I shall presently quote the account of another, but altogether different, intra-uterine lesion, of extra-

¹ See Rokitansky, *Pathol. Anat.*, vol. ii. p. 350.

² *Op. jam. cit.*, p. 199.

ordinary interest, both as bearing on this point, as well as in its relations to legal medicine.

In the early part of these observations, I stated that a knowledge of such subjects as we were then about to consider, namely, certain conditions of intra-uterine existence, whether arising from accidental injuries, or pathological lesions, might occasionally become of paramount importance; as such alterations might readily assume highly influential relations both with our social happiness, and even with the administration of justice: in illustration of this statement, I wish now to offer a few observations.

Disease in its own system, defective organization, or abnormal conditions of its envelopes and appendages, such as have been already noticed in former chapters of this book (see pp. 142, 313), may so impede the development of the *foetus*, and ultimately extinguish its life, that it may be born presenting characters belonging to a period of intra-uterine existence not more than half its real age: and hence, under peculiar circumstances, a character of spotless purity may be tarnished, and branded with disgrace and shame, and a long train of unmerited evils may invade a home where all was peace before; and thus it may happen: a husband goes abroad, leaving his wife a short time pregnant; some two or three months afterwards, some morbid lesion attacks the *foetus* or its envelopes, a suitable supply of healthy nutrition is denied it, and it ceases to grow and to live; but it is not decomposed, and is retained till the end of five or six months (during all which time the husband is away), and is then expelled, presenting a development corresponding to not more than half that period; suspicion is readily aroused; a medical opinion is sought for, and if that opinion be incautiously given, guided by the amount of development alone, and without sufficient examination into, and appreciation of the influence of morbid causes, it would be difficult to overstate the amount of domestic misery and disunion that may ensue. I here describe what I have more than once witnessed. (See p. 314.)

This is very deplorable; but far worse might happen; certain accidents may occur to, and injuries be sustained by the child in utero, whether produced by external agencies, or simply resulting from spontaneous pathological alteration, the evidences of which at birth, might suggest so forcibly the idea of intentional violence

offered to it, that if we were not previously acquainted with such facts as we are here considering, our unassisted judgment would refuse its assent to the belief; that some of these conditions *could* arise from mere accidental causes; and we would be almost irresistibly led to the conclusion, that premeditated injury had been inflicted on the child; when, in reality, nothing of the sort had ever been even thought of; and thus might we unjustly and cruelly imperil the life of one entirely innocent of the crime imputed to her.

Every accoucheur is aware, that in very many cases indeed, the new-born child presents a tumor on the head, such as might result from a blow, or other intentional violence offered to it after birth; but which is really only the effect of pressure sustained during parturition; and in general, its size is proportioned to the difficulty of the labour, and the consequent amount of pressure undergone; occasionally, however, this tumor appears after an easy labor, and sometimes not for a day or two after birth.

The same causes which give rise to the formation of the bloody tumors just noticed, have not unfrequently produced fractures or depressions in the flat bones of the cranium, especially in the parietals; more particularly in cases of contracted pelvis, where the promontory of the sacrum projects considerably inwards; though I have known such accidents happen without the concurrence of any such state of the pelvis; but from the interposition of an arm between the head and the bony wall of the pelvis, and sometimes without any obvious cause, as in Case XLIV.

CASE XLIII.—Siebold has reported a case in his journal, in which the labor was painful and tedious, and the child was born dead; a large bloody tumor was found over the right parietal bone; and on exposing the bone, it was traversed by three distinct fissures passing in different directions; no instruments had been used.¹ But these injuries of the cranial bones may occur not only independently of contracted pelvis, but even of slow or difficult labor.

CASE XLIV.—I, some years since, attended a lady in her second labor, and, after about three hours from its commencement, she gave birth to a healthy boy; but with a depression in

¹ See Med. Chir. Rev., No. 37, July, 1833, p. 211.

the left temporal bone, which would readily have contained an almond in its shell; by degrees, the depression disappeared, and at the end of a few months, no trace of it remained; the lady's first labor was easy, as were also those that succeeded the birth of this child, and no such injury was observable in any other of the children.

CASE XLV.—More recently, I was informed by Dr. Mulock, of a case in which, on the subsidence of a cranial tumor, a spicula of bone was felt distinctly projecting under the integuments; the labor had been slow, but natural. Instances of injury to the cranial bones before birth have been recorded by Osiander, W. J. Schmitt, Schnuhr, d'Outrepont, and Graetzer:¹ and still more recently, three well-marked cases, in which several fractures were found under bloody tumors, were published by Drs. Flugel and Schilling.² When these injuries of the foetal head were first observed, they were attributed to violence, by Haller, Rosa, and others, the error of which opinion was first perceived by Roederer and Baudelocque; and it is needless to say how important is the distinction, especially in a medico-legal point of view.

CASE XLVI.—A few years since, a case occurred in England which appears to me of unparalleled interest and importance, in many points of view; but especially as regards the administration of criminal law.³ A lady, Mrs. B., when seven and a half months pregnant, in going down stairs, trod upon a cat; to save herself from falling, she made a violent effort, and sprang down the flight of stairs, receiving, of course, a severe shock, which produced faintness; and next day, a slight sanguineous discharge, per vaginam, showed that some internal injury had been sustained; however, she soon recovered her usual health and spirits. Six weeks afterwards, she gave birth to a healthy male child, with an extensive open wound across its back, and down the arm, to within an inch of the elbow. Now what could have made this wound or rent. The severity of the labor?—no, for it was unusually easy. Was it caused by the doctor?—no, for there had been no interference whatever; but one existing fact

¹ Vide *op. jam cit.*, capp. 61, 62.

² *Brit. and For. Med.-Chir. Rev.*, April, 1852, p. 558.

³ See *Med.-Chir. Trans.*, vol. xxxii. p. 59, where the case is related by Mr. J. D. Jones.

showed, beyond all controversy, that the wound must have been made *some time before birth*; for a large proportion, fully a third, of it *was already healed*, and the rest of it had a healthy, granulating surface, like a wound healing in the usual manner. After birth, the healing proceeded most favorably, and in about five weeks, no other sign remained than a large cicatrix.

That this wound occurred at the time of the mother's accident on the stairs, six weeks before her delivery, seems almost evident; though the exact mode of its production is a problem, by no means easy of solution: but this does not so much concern us at present, as the fact, of which there is no doubt, that a child was born with a large open wound on its body, part of which was healed; showing that it must have occurred within the uterus some time before. (See fig. 46.)

Now in the case of this married lady, with her child alive and well, no suspicion unfavorable to her *could* arise, or be enter-

Fig. 46.



tained for a moment; but let us suppose such an occurrence to take place under other circumstances. A friendless unmarried female is likely to be a mother, and anxious, to the last moment, to hide her shame from the scorn and reproach of the world,

where so many act as if they thought that their zeal for morals is best shown by their forgetfulness of Christian charity; she keeps her secret and her sorrow to herself, and perhaps makes no preparation; and all these things are against her; let us suppose, then, that under such circumstances, there happens to her the same accident that occurred to Mrs. B., and that soon afterwards, perhaps that night, or the next, alone, without any friendly hand to aid her in her hour of trial, or any human witness to testify in her favor, she gives birth to a dead child, or one which dies soon after with a long wound or gash across its body, as in Mrs. B.'s child, but in this case, quite fresh, and showing no evidence of healing.

Is it not in the highest degree probable, nay, is it not almost certain, that, under such circumstances, the death of this child would be attributed to the wound, and the wound be regarded as the work of the hapless mother's hand?

In vain might the wretched woman declare that the child was born so wounded; who would believe her?

Were we not in possession of such a fact as that we have just been considering, few could bring themselves to believe or acknowledge the possibility of such a wound having been produced within the womb by accidental causes; and yet, it is an undoubted fact, and not half so wonderful as the process of spontaneous amputation; but one shudders at the thought of what might be the consequences of such a disbelief to the wretched mother; perhaps an ignominious death for a crime which she never committed, nor even thought of.

Almost the same observations would apply to those cases in which fractures of the skull, with bloody tumors from natural causes, have been found in new-born children.

The following singular case, very recently brought under my observation, although differing widely in its pathological characters from the one just described, has, notwithstanding, several points of relation therewith, presenting a lesion, whose conditions so closely resemble those which would result from intentional violence, that, under doubtful circumstances, and without a sufficiently accurate investigation, they might be but too readily mistaken for, or confounded therewith; or, at least, entail on the attendant practitioner unmerited obloquy, as having, by mis-

management in the delivery, caused the injury; while, as in the case of Mrs. B., there is undeniable collateral proof, that the lesions existing had been in progress for a considerable time before birth, and were produced by a morbid adhesion between the surface of the placenta and the body of the child.

CASE XLVII.—On the 1st January, 1856, Dr. Brabazon, of Downpatrick, very kindly placed in my hands the extraordinary child of which there is subjoined an accurate portrait.

Dr. Dickson of Ballynahinch, who attended the mother, mentions, that she and the father were young and seemed healthy,

Fig. 47.



but they were cousins, as were also their father and mother respectively; and he adds that in the part of the country where they reside, such intermarriages are very frequent, and that the result is, that there are very many mental debilities and bodily deformities there existing. It was a first labor in the eighth month, and an arm presentation, requiring turning: which was easily accomplished; but, in doing so, there was distinctly felt a sensation of tearing asunder attached surfaces.

The intestines of the child were much protruded, but attached and otherwise normal. The delivery having been completed by manual removal of the placenta, no trace of a cord could be discovered, either on the secundines, or attached to the child; the placenta was so much lacerated at the part where it had adhered to the foetus, that it was found impossible to tell the exact amount, or nature of the connections which had existed.

Diligent search was made for the absent extremity, even to the introduction of the hand into the uterus, but it could not be found.

There was complete absence of the right lower extremity. The abdominal wall and side of the pelvis being, also, deficient

at the same side. The cavities of the abdomen and pelvis were consequently exposed.

The abdominal wall was deficient from the middle line to the right lumbar region; the edges of this opening were uneven and jagged, as if they had been torn from the structures with which they had been continuous or united: posteriorly, a piece of membrane remained attached to the edge, *evidently continuous with the skin, and yet, presenting both internally and externally, the smooth shining appearance of serous membrane.*

The sacrum *was smoothly rounded off on the right side*, in a line with the bodies of the lumbar vertebræ. At the symphysis pubis, there remained attached about a third of the right pubes; just as the bone was dividing into its two rami, it was cut off, *the edges being quite smooth and round, precluding the idea that the bone had been broken off.*

Thus, the entire of the ilium and ischium, and two-thirds of the pubes of the right side were wanting; there was, in consequence, no acetabulum for the head of the femur, had that bone existed.

It is worthy of remark, that no trace could be found of the right psoas muscle, while the left was distinct and well developed. The aorta bifurcated naturally, the internal iliac terminating about half-way between the pubes and umbilicus, in an open mouth; where, probably, it had entered the placenta: the external iliac could not be traced. There was no trace, whatever, of a cord. The head and upper extremities of the child were quite normal, and the thorax nearly so; the left foot presented only two long toes, curiously placed (see fig. 47); but with this exception, the left lower extremity appeared natural.

The thorax was a good deal narrower, and less developed, than it might be expected to be, when compared with the length of the child, which was sixteen inches, and the volume of the head, which was between thirteen and fourteen inches in circumference. The genital organs were diminutive.

When this child was brought to me, the intestines had been, I believe accidentally, removed; and at a first view, and without any more particular investigation, the breach in the abdominal parietes, and side of the pelvis, looked as if the absent lower extremity and portion of the integument had been torn off by

force or roughly cut away with a knife; and in fact, this opinion, as to the cause of the injury, had been expressed by more than one medical man; who, however, had only an external view of the child, without any opportunity of further investigation. The idea of spontaneous amputation, in the sense in which we have been heretofore considering it, was clearly not admissible; while the flap of membrane (no doubt a portion of the amnion), smooth on both surfaces, and continuous with the torn integuments, at once suggested the idea of a previous adhesion of the skin to the serous coverings of the placenta: and on further examination, the fact that the surfaces of the remaining pelvic bones *were rounded off and quite smooth*, proved that such condition could only have resulted from the long-continued action of a vital process.

In 1830, I published¹ a case in some respects resembling the above; and several others have been recorded, having some points in common with it also; but, as far as I know, the present case is in its most essential peculiarity, unique.

A more detailed account of this curious case is inserted in the *Dublin Medical Journal*, for the present month, May, 1856.

CASE XLVIII.—On the 19th April, 1856, Dr. Shannon was good enough to send me a seven months' child, born under his observation, on the previous day; which exhibited another instance of total absence of the entire right lower extremity, and part of the pelvis, in consequence of cohesion of the placenta with the body of the child, at the perineal region, where it still remained adherent.

The mother had always been healthy, was now twenty-three years of age, and had previously borne one child, which was perfectly well formed; her husband was not a relative by consanguinity: she had not met with any accident or fright during her pregnancy; the liquor amnii had been prematurely discharged, and when labor was established, the abdominal viscera of the child were found in the vagina; the delivery was safely accomplished, and there was no hemorrhage.

This second instance of the same kind, occurring within so

¹ Dublin Med. Trans., N. S., vol i. p. 375. See also Geoffroy St. Hilaire's *Anatomie Philosophique: Monstruosités Humaines*.

short a time, and from the same cause, had many points of remarkable resemblance to the case just related: there was entire absence of the right lower extremity, and a great part of the pelvis; there was ectopia viscerum abdominalium; the left lower extremity was present, but partially deformed; the thigh was drawn up, and bent on the body, at nearly a right angle, while the leg was flexed close along the thigh (see fig. 48); the foot

Fig. 48.



was very much bent upwards, with the heel sunk in a pouch of integument, lying close upon the junction of the placenta with the body of the child: it was cleft into two divisions, and bore a remarkable resemblance to the foot in Case XLVII. (See fig. 47.)

The liver and intestines were protruded into a pouch formed by a duplicature of the amnion, almost exactly in the same way as in the case which I formerly described, and which is referred to at p. 554. The amnion was also perfectly continuous with the skin of the child externally, and with the serous covering of the abdominal viscera.

There was no funis umbilicalis; but a large vein from the centre of the placenta (see fig. 48) carried the renewed blood to the child, not directly to the liver, as by the umbilical vein in ordinary cases, but through the veins of the abdominal viscera. From the liver, the blood was carried in the usual way, until it arrived at the end of the abdominal aorta, whence it was returned to the placenta, through the right hypogastric artery, which was much dilated, and of equal calibre with the descending aorta.

The head, upper extremities, and thorax, were normal, and the expression of the face rather pleasing than otherwise; the spinal column was well developed, and its foramina normal; the ilio-sacral symphysis, on both sides, was perfect; the right ilium was normal in all its proportions, except its upper and anterior crest; there was no trace of the right ischium or pubes. In Case XLVII. there was a small portion of the right pubes attached to the left; in this, there was not a vestige; it was a smooth surface: on the left side of the pelvis, the parts were natural; the femur, tibia, and fibula of the left limb were perfect; the patella was *in situ*, and a particularly strong fascia covered the knee-joint.

The nerves of the sympathetic system were particularly well developed; the sacral nerves of the right side were present, but were mere threads; the nervous system of the left side was normal, and the great sciatic well developed.

All the viscera above the diaphragm were normal, as were also the liver, spleen, stomach, intestinal canal, and kidneys; the ureters were much dilated.

The genitals, both external and internal, were confused, and defective in development; on the right side, the Fallopian tube was distinctly traceable to the bladder-pouch, on the right outer wall of which it was lost; the ovary and fimbriae connected with this right Fallopian tube were very distinct, but were adherent very high up, close to the kidney; there was no trace of vaginal orifice, but the remains of the left labium are seen at the left, upper, and outer border of the heel-pouch.

I shall, at present, only further notice one of the most curious facts observed in this case. In the integuments, just over the middle of the sacrum, and about half an inch above the line of demarcation between the skin and amniotic membrane, was a very small, perfectly well defined hole, with smooth edges, just large

enough to admit a bristle to pass through it into a canal about an inch and a half in length; this little aperture had all the appearance of being artificially made, but was, beyond all doubt, of intra-uterine origin; and is deserving of especial notice in a medico-legal point of view, as, under other circumstances, it might readily be mistaken for a hole intentionally made with a pointed instrument, for the purpose of destroying the child's life, by passing a long needle up into the spinal marrow.

Several years ago, a woman was executed in this city for the murder of her infant, by a means closely resembling that just alluded to; she passed a long darning-needle through the upper part of the spinal marrow into the brain, where it was found; she confessed her guilt, and further declared that the idea of injuring her child had never entered her mind until she witnessed the execution of a woman who had destroyed her infant by the same means.

A more fully detailed account of the above case will appear in the *Dublin Medical Journal*, for August, 1856.

A case related in Paris and Fonblanque's *Medical Jurisprudence*¹ is so curiously illustrative of the above remarks, and of the necessity of attending to such peculiarities of structure, that I shall subjoin a brief account of it.

CASE XLIX.—At the Devon Assizes, in March, 1800, Thomas Bowerman was indicted for the murder of Mary Gollop, when fourteen years of age; more than a month before the trial, his daughter Elizabeth, twelve years of age, stated that she saw him kill Mary Gollop, by pushing an awl into her head, and pointed out the spot, near the ear, where the perforation had been made. In consequence of this statement, in February, 1800, two years and a half after her death, the body of Mary Gollop was disinterred, and an inquest held. The skull was examined, and a small hole, of the size of an awl, was found near the ear, just where Elizabeth Bowerman had pointed out; the coroner's jury, in consequence, returned a verdict of wilful murder against the prisoner. The case attracted the attention of Mr. Sheldon, who, after examining the skull, declared his opinion that the hole, supposed to have been made by an awl, was a natural perforation, for the passage of a vein; and pointed out the fact that there was a sort

¹ Vol. iii. p. 80.

of enamel round it, which could not have been there if it had been made by force. He, moreover, produced a dozen or more human skulls, having in them similar perforations, variously situated, and presenting a similar appearance of polish round their edges. The consequence was that the grand jury ignored the bill.

CASE L.—In the following case, there were combined fracture of an arm, and wounds on the head of a child at birth, produced by an accident happening to the mother. Madame K.,¹ when thirty-six weeks pregnant, for the third time, fell backwards off a ladder, on the 21st September; she was stunned, and had pains in the loins and lower belly, until her accouchement, which took place on the 6th of October, fifteen days after the accident to the mother. The labor was tedious and painful, but terminated without any interference.

The child was thin and puny, and had on its head three wounds or sores—two on the frontal, and one over the occipital bone; they were granulated, and suppurating healthily. In addition to these injuries, the forearm was fractured; but all did well under simple management.

Here, then, are truths which deeply concern the whole body of society, and may vitally affect their welfare; facts to be well weighed and remembered by all, but especially by those on whom devolves the arduous and anxious duty of defending the accused; and by those, also, who hold the scales of justice, when life and death are in the balance.

Thus, too, have we learned how true it is that man is not merely "born to misery," but that he is in many ways a sufferer long before; we have seen him

— "curtailed of his fair proportion,
Cheated of feature by dissembling nature,
Deform'd, unfinish'd, sent before his time
Into this breathing world, scarce half made up,
And that so lamely and unfashionable—"

under the influence of means and causes which our general knowledge of disease, or of physiology, never could have enabled us to anticipate or conjecture, had they not been disclosed to us by nature's teaching.

¹ Arch. Gén. de Méd., Jan., 1839, p. 106.

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